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Pseudogapping and Gapping: The Same, but Different

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1. Pseudogapping and Gapping: Introduction

This paper introduces a new movement-based analysis of Pseudogapping (PG) that unifies PG with Gapping and improves both conceptually and empirically on Lasnik's (1995,1999) analysis of PG. Levin (1979186) gives the name Pseudogapping to forms that show apparent verbal deletion under identity, with a tensed auxiliary as a left remnant. The following provide simple examples:

1. a. Robin could speak French before Kim could ~~speak~~ Russian
   b. Pat will attend CSU Fresno, and Terry will ~~attend~~ CSU Stanislaus

On the other hand, Gapping shows apparent verbal deletion without any remnant auxiliaries. The following provide simple cases:

2. a. Pat loves Fresno, and Terry ~~loves~~ Clovis
   b. Robin ate beans, and Kim ~~ate~~ rice

PG and Gapping share some superficial similarities: i) a main verb (at least) deletes in both; ii) both require remnants on both sides of the apparent deletion. This alone suggests the plausibility of a unified analysis for the two. More compelling motivation, however, comes from a previously unnoticed implicational universal:

3. If a language exhibits PG, it also exhibits Gapping.

We know of no language that falsifies the above statement. Example languages in keeping with (3) include (PG in (a), Gapping in (b)):

4. German

a. Robin konnte Russiche sprechen bevor Kim Franzoesich konnte
could Russian speak before French could
'Robin could speak Russian before Kim could French'

b. Robin verkauft Fisch, und Kim Reis
'Robin sells fish, and Kim rice'

5. Latvian

a. Vina var runat angliski, un vinš var italiani
She can speak English, and he can Italian

b. Vina runat angliski, un vinš italiani
She speaks English and he Italian

6. American Sign Language

a. I WILL READ BOOK, YOU WILL READ MAGAZINE

b. I PREFER FISH, YOU PREFER CHICKEN

There are, however, languages that exhibit Gapping but not PG. Spanish gives one example:

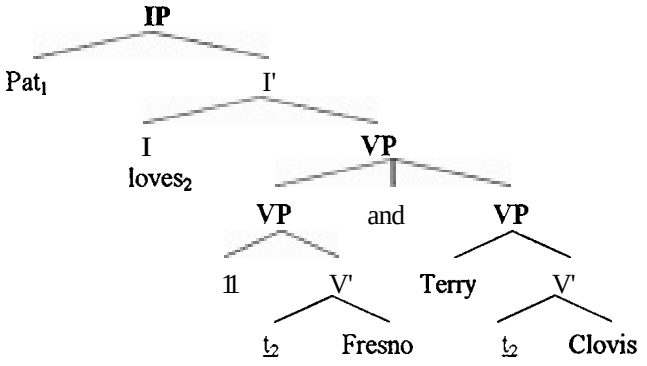
7. Robin comió los frijoles, y Kim el arroz (Gapping OK)
'Robin ate beans, and Kim rice'

8. *Robin puede hablar español, y Kim puede inglés (PG bad)
'Robin can speak Spanish, and Kim can English

The above one-way implicational universal in addition to the aforementioned similarities motivates us to analyze PG as a marked type of Gapping. We do this by accepting Johnson's (1994) Gapping analysis and extending its spirit to cover PG as well.

2. Johnson's Gapping Analysis

Johnson analyses Gapping as resulting from Across-the-Board verb movement fiom conjoined VPs:



Note that in this analysis, Gapping, (contrary to the traditional deletion analysis) does not underlyingly consist of two full clauses; we have VP-coordination rather than conjoined CPs. The verbs (obligatorily) undergo V-to-I movement in ATB fashion. The subject of the first conjunct raises from [Spec, VP] to [Spec, IP]; Johnson suggests that Case requirements override the Coordinate Structure Constraint violation. The subject of the second conjunct remains in its [Spec, VP] position.

This analysis makes several correct predictions that a deletion-based analysis cannot. First, Gapping constructions require non-coreferential subjects.

10. *Pat$_1$ loves Fresno, and Pat$_1$/she$_1$ Clovis

This falls out under binding theory, since the subject of the first conjunct, from its landing site of [Spec, IP], c-commands the in *situ* subject of the second conjunct. Johnson's analysis also correctly predicts that Gapping prohibits an S-adverb on the second conjunct, which is actually a VP rather than CP:

11. *Certainly, Pat loves Fresno, and [VP probably, [VP Terry t Clovis]]

Also, Gapping can show "quirky Case" on the second conjunct:

12. Robin cooked the fish, and him/(?)he, the rice

The possibility of quirky Case follows from the fact the second subject never undergoes a checking relationship within IP. These virtues seem sufficiently strong for us to analyze PG in a similarly-spiritedfashion.

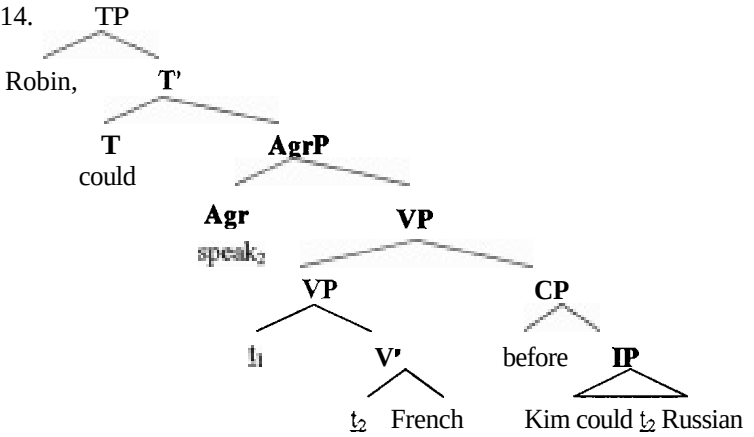
3. The New Pseudogapping Analysis

In our effort to show PG as essentially a more marked case of Gapping, we propose:

13. **Pseudogapping results from ATB V-to-I movement from a VP and a subordinate CP.**

We assume that subordinate clauses adjoin to VP. Under the new analysis, the structure for (1a) becomes:

14.



Several key points distinguish this from the traditional deletion analysis. First, Psuedogapping involves ATB V-to-I movement, just as does Gapping. Second, this ATB movement is "asymmetric," since the "conjuncts" are not of like type; a VP and a CP. Third, the ATB movement is purely optional; neither the main clause nor the subordinate clause depends upon the ATB verb raising to survive. Each ***occurrence*** of ***speak*** could have simply undergone V-to-I in its own clause, which would have rendered the more natural ***Robin could speak French, and Kim could speak Russian***. PG, then, is a stylistic variant permitted but not required by the grammar.

The notion of asymmetric ATB movement, though unusual, has precedent; arguably Parasitic Gap constructions and certain Right-Node Raising constructions manifest this (Williams (1990)):

15. a. This is the paper **which**$_1$ [IP Kim read t_1 [CP before filing t_1]
    b. [CP [CP Kim read t_1, [CP before Robin filed t_1,]][this paper],]

This analysis of PG renders several important correct results. First, we have a correct expectation for the aforementioned implicational universal: ***PG → Gapping***. Both result from ATB V-to-I, so that languages standardly showing V-to-I will be candidates to exhibit Gapping and PG. However, the asymmetric nature of PG makes it the marked case. We assume that UG permits symmetrical ATB "for free," but that

asymmetric ATB will come at some cost. So a language might show Gapping but not PG (Spanish), but never the other way around.

Second, the new analysis predicts that any language without V-to-I movement will have neither PG nor Gapping. Vietnamese, Thai and Mandarin support this prediction. Consider Vietnamese, in which verbs lack inflection totally, suggesting that they never raise to I.

16. Kim **dôc** **sách**
reads/read books

Vietnamese also fails all other traditional diagnostics of verb movement (no inversion in questions, etc.). And without verb raising, Vietnamese can show neither Gapping nor PG:

17. ***Kim ăn cá, và Robin** bo (Gapping bad)
eat fish and beef
'Kim eats fish, and Robin beef

18. *Kim **sẽ** mua **một chiec** xe **truóc** Robin se **môt cái nhà** (PG bad)
will buy one CL car before will one CL house
'Kim will buy a car before Robin will a house'

Note that a deletion-based analysis simply has to stipulate that Vietnamese-type languages lack deletion; with a movement-based analysis, though, we have an explanation based on prior principles.

Third, this analysis predicts Gapping will sound less marked than PG in languages that allow both. In Gapping constructions, Case requirements within IP motivate the ATB V-to-I movement. However, in PG the **ATB** V-to-I stands **as** truly optional. Neither the main clause nor the subordinate clause needs to satisfy Case requirements. In addition, the asymmetric nature of the ATB in PG makes it marked.

Fourth, PG actually sounds more natural with a subordinator than it does with a coordinator. This falls out under o w analysis, since we say PG crucially involves subordination:

19. Robin could speak French **(?)and/before** Kim could Russian

Were the diagram in (14) to show the word and, it would have to show it in a C position; in this case and would serve as a "defective[n] subordinator of sorts. Since before more naturally fills the C position, its PG form sounds better. For its part, Gapping requires pwe coordination.

In addition, the analysis predicts that PG, unlike Gapping, allows for **coreferential** subjects. This follows since PG involves a subordinate clause, with the consequent

binding domain (contrast w/(10) for Gapping):

20. Robin$_1$ could speak French [CP before she$_1$ could Russian]

We point this out primarily because Levin gives the above as the principal argument for not showing PG and Gapping as related. We have seen, though, that we can capture the similarities between the two from the fact that they both involve ATB V-to-I, while capturing the important differences with the claim that the ATB proceeds from different types of conjuncts.

4. Pseudogapping: NOT a Special Case of VPE

Lasnik (1995,1999) has offered an interesting analysis of PG as a special case of Verb Phrase Ellipsis (VPE). Here, we show several problems for Lasnik's idea that the new analysis does not face. Lasnik shows PG as a two-step process: 1) overt raising of a verbal complement to [Spec, Agr-oP], followed by 2) VPE. So a sample derivation becomes:

21. Robin could speak French and [TP Kim could [AGR-OP Italian, ~~[VP speak t_i]]]~~

However, this forces the prediction that any and all languages with PG must have VPE as well. This prediction simply does not bear out:

22. German
   a. Robin konnte Russiche sprechen bevor Kim Franzoesich konnte
      could Russian speak before French could
      'Robin could speak Russian before Kim could French'
   b. *Robin könne Fisch essen, und Kim könne auch (VPE bad)
      'Robin can eat fish, and Kim can also'

23. Latvian
   a. Vina var runat angliski, un vinš var italiani (PG good)
      She can speak English, and he can Italian
   b. *Vina var runat angliski, un vinš var ari (VPE bad)
      She can speak English, and he can also

Our analysis (apparently correctly) connects PG with Gapping, rather than W E , in the implicational universal.

Lasnik's analysis faces other empirical problems as well. Lasnik relies on [Spec, Agr-oP] as a landing site for the overt movement of the surface right remnant. The following examples, though, prove unlikely candidates for such overt raising:

24. a. You behaved shamefully, but I did ~~behave~~ [ADVP bravely]
b. This new road will lead to Clovis, and that one will ~~lead~~ [PP to Fresno]
c. Robin is likely to win, and Kim is ~~likely~~ [IP to lose]
d. Pat may believe now that every cloud has a silver lining, but she will tomorrow ~~believe~~ [CP that no good can ever come to people in this evil, evil world]

None of the above bracketed elements has Case or Agreement features normally associated with AgrP. If one loosens the concept of the role of Agr-oP (Lasnik appeals to an EPP feature checked there), problems remain. Adverbs do not make good subjects, so the (a) form would not seem to allow raising to [Spec, Agr-oP]. In (d), we see an extraposed clausal complement, which cannot have [Spec, Agr-oP] as its landing site.

Furthermore, contrary to the expectations of Lasnik's analysis, PG and VPE differ in important empirical ways. For instance, PG shows island effects, whereas W E does not:

25. a. Robin can speak Russian, and I know [a friend [who can ~~speak Russian~~ too]]
b. *Robin can speak Russian, and I know [a friend [who can ~~speak~~ Italian]]

26. a. Robin will fascinate the children, and I believe [the claim [that Kim will ~~fascinate the children~~ too]]
b. ?*Robin will fascinate the children, and I believe [the claim [that Kim will ~~fascinate~~ the adults]]

For us, the illformed PG examples fall out under general constraints on movement. Since VPE does not involve movement, no such problem exists.

Also, as Levin (1986:54) notes, VPE readily allows for more than one supporting auxiliary, while PG does not. The following contrast:

27. a. Robin has been playing the oboe, and Kim has been ~~playing the oboe~~ too
b. ?*Robin has been playing the oboe, and Kim has been ~~playing~~ the bassoon

28. a. Pat could have been drinking beer, and Kim could have been ~~drinking beer~~ too
b. *Pat could have been drinking beer, and Kim could have been ~~drinking~~ gin

Lasnik equates PG with VPE and hence cannot explain the above contrasts. For us, PG involves V-to-I movement. We take I as including TP and Agr-sP. Note that to amve at the (b) forms above, the ATB Verb movement would have to have as its landing site a projection *below* IP (perhaps *an* Asp head position) The degradation follows, then, from a suboptimal landing site.

5. Conclusion

Pseudogapping and Gapping are the same, but different. They are the same in that they both involve ATB V-to-I movement; they are different in that PG shows asymmetric ATB movement. Our unification of PG as essentially a marked type of Gapping enables us to make a number of correct predictions, and avoids the set of problems facing's Lasnik's VPE-spirited analysis of PG.

References

Johnson, Kyle. 1994. Bridging the Gap. Ms. UMass Amherst.

Lasnik, Howard. 1995. "A note on Pseudogapping.," ***Papers on Minimalist Syntax,*** eds. Rob Pensalfini and Hiroyuki Ura. MIT Working Papers in Linguistics 27.143-163.

Lasnik, Howard. 1999. "On feature strength: Three minimalist approaches to overt movement," ***Linguistic Inquiry,*** 30.197-217.

Levin, Nancy. 1979. ***Main-Verb Ellipsis in Spoken English.*** Ohio State University doctoral dissertation. Published 1986. New York: Garland Press

van Oirsouw, Robert. 1987. ***The Syntax of Coordination.*** New York: Croom Helm.

William, Edwin. 1990. "The ATB Theory of Parasitic Gaps," ***The Linguistic Review*** 6.265-79.

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Consonantal Variation and Root-Faithfblness in Affixation

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1. The Faithfulness for Root in Optimality Theory

The faithfulness for root has been one of the key notions in recent studies in Optimality Theory. McCarthy & Prince (1995), for example, proposed the universal ranking of Faith-root >> Faith-affix. For this ranking, they showed that vowels are distinctive in backness for roots in Turkish, but not for affixes. Beckman (1997) also discusses the asymmetry between root and affix in terms of positional faithfulness for root. According to this argument, affixes in general may avoid clusters, complex onsets, long vowels, or geminate, even when roots permit them. On the other hand, there are no segment types or configuration that are only permitted in affixes but barred from roots.

In Ahn (2000b), I also argued that Faith-root constraint plays a crucial role in the selection of the optimal output in English *coN-* prefixation. It is a well-known fact that the featural property of the prefix-final nasal of *coN-* varies depending on the place property of the root-initial consonant: e.g., *com-*, con-, *co*[ŋ]-, etc. In other words, in *coN-* prefixation, input segments of a root remain intact, while prefix-final segments often vary: e.g., *co[m]bine, co[n]tact, co[ŋ]gress, co[l]lect, co[r]rect,* etc. Therefore, we employ the following type of a general faithfulness constraint (1) showing a general tendency of positional faithfulness (for a root) (Beckman 1997).

(1) Faith-root
Identity of root segments of the input are to be preserved in the output.

As for *coN-* prefixation, we observe that only one nasal, rather than a geminate nasal, can appear when we affix the prefix to a nasal-initial root.

(2) [m]: comment, commerce, commit, commune, commute, etc.
[n]: connate, connatural, connect, connote, connumerate, etc.

If we rely on a rule-based approach deleting an identical nasal, therefore, we

have to face an indeterminacy problem on deciding which nasal to be deleted (See Ahn (2000c) for details.). In other words, it is not possible to figure out whether the prefixal nasal or the root-initial one is deleted.

Moreover, we need a different rule if the prefix is attached to a liquid-initial root. And we get col- */cor-*, rather than con-, and there is no geminate liquid in the following examples.

(3) a. col-: collaborate, collapse, collate, collect, collide, collude, etc.
b. cor-: correct, correspond, corroborate, corrode, corrupt, etc.

These cases show the general phonotactics in English phonology banning a sequence of two identical consonants across a morpheme boundary. Therefore, this is a case of consonantal coalescence in which two distinct segments are merged as a single segment (e.g., $C_1C_2 \rightarrow C_{1,2}$).[1]

(4) Input: c o N_1 + m_2 it
output: c o $[m]_{1,2}$ i t

In the input, /N/ precedes the root-initial /m/ in the input, while both segments share a correspondent [m] in the output. The following tableau shows how we get the optimal candidate. Observe that Faith-root plays the crucial role in the selection of (5d) over (5e).

(5)

Input: /coN$_1$+m$_2$it/	Share(place)	*Geminate	Faith-root	Max-IO	Linearity
a. commit	*!				
b. commit		*!			
c. comit				*	
d. ☞ com$_{1,2}$it					*
e. con$_{1,2}$it			*		*

Linearity is violated in consonantal coalescence, while all other constraints including *Geminate dominate Linearity. *Geminate requires that any sequence of two identical consonants be prohibited in English phonology.[2] Share(place) requires that the place property of a nasal be identical to that of the immediately following stop. With *Geminate and Share(place), we get only one consonant in the prefixation of *coN-* to a root beginning with a nasal: e.g., command [kəˈmænd] (*[kəˈmmænd]). Moreover, *Geminate is in conflict with a faithfulness constraint, Max, in that one of the two identical consonants may not surface. Furthermore, Linearity requires that the linear sequence of input segments be maintained in the output: e.g., combine [kambarn] (*[kəbaɪn] or *[kəmaɪn]). This constraint, however, is violated in coalescence.

A similar account can be provided for the prefixation of *coN-* to a liquid-initial

root producing *col-l...*, ***cor-r....*** Observe the (crucial) role of Faith-root in the selection of the optimal output for col-lect.

(6)

	/coN$_1$+L$_2$ect/	*N+L	Share(place)	*Geminate	Faith-root	Max-IO	Linearity
a.	conlect	*!					
b.	connect			*!	*!		
c.	collect			*!			
d.	colect					*	
e. ☞	col$_{1,2}$ect						*
f.	con$_{1,2}$ect				*!		*

As shown above, we need a new constraint ***N+L** prohibiting a nasal + liquid sequence in **affixation.**[3] In this tableau, we observe that **Share(place)** has no significant role since both /n/ and /l/ have the same place of articulation, **i.e.,** coronal. The **final** candidate is selected in spite of the violation of Linearity, while (6d) is discarded since the input segment /n/ does not have a correspondent in the output, violating **Max.** What we need to observe is that Faith-root takes a crucial role in the selection of (6e) over **(6f).**

2. Asymmetry between Class 1 Prefixation and Suffixation

There are, however, numerous cases which seem to show the dominance of Faith-affix over Faith-root. In a recent study on English **suffixation,** for example, Lee (2000) argues against the status of Faith-root as a metaconstraint. According to his argument, unlike in Class 1 prefixation, there are numerous examples showing the faithfulness for affix in Class 1 **suffixation.**[4] For example, Lee observes voicing assimilation in heteromorphemic words consisting of the root plus suffixes like ***-tion***, *-ture* and -tor, as shown below. The underlying voiced velar stop /g/ in reg- 'to **rule'**, *frag-* 'to break', and ag- 'to do' changes into the voiceless counterpart [k] due to the following voiceless stop /t/.

(7) a. reg+al, frag+ment b. reg+ent; frag+ile, ag+ent, ag+ile
c. rec+tor; frac+tion, frac+ture, ac+tor

Lee argues that the voiced velar stop /g/ in the roots preserves its voicing when it is followed by vowels and voiced consonants, as evidenced in (7a, b) showing that velar stops undergo Velar Softening. (By Velar Softening, the velar stops /k, g/ become [s, dʒ] respectively before a non-low **front** vowel.)

This type of regressive voicing assimilation also occurs when a root-final consonant is voiceless and an **affix-initial** consonant is voiced, as exemplified in (8).

(8) a. doc+ent; sec+ant b. dog+ma; reg+ment

The voiceless stop /k/ in the roots ***doc-*** 'teach' and ***sec-*** 'cut' assimilates in voicing to the following voiced segment in the suffixes. The example ***docent*** in **(8a)** undergoes Velar Softening before an underlying non-low front vowel while ***dogma*** undergoes voicing assimilation triggered by the suffix-initial voiced nasal stop /m/ (Lee 2000). In other words, we retain the voicing property of the **affix** segment, while the root-final consonant takes the voice feature of the **affix**-initial consonant. Lee shows the dominance of Faith-affix over Faith-root in (9). Lee also provides similar cases **from** voicing assimilation and consonant deletion in **(10)** and **(11)**.

(9)

/sek+ment/	Agree(voice)	Faith-affix	Faith-root
a. se[kn]ent	*!		
b. se[kŋ]ent		*!	
c. ☞ se[gn]ent			*

(10) Voicing assimilation

/deceive+tive/	Agree(voice)	Faith-affix	Faith-root
a. dece[bt]ive	*!		
b. dece[bd]ive		*!	
c. ☞ dece[pt]ive			*

(11) Consonant deletion

/succeed+tion/	Agree(voice)	Faith-affix	Faith-root
a. succe[dʃ]ion	*!		
b. succe[dʒ]ion		*!	
c. ☞ succe[ʃ]ion			*

As discussed so far, Lee's argument against the meta-ranking of Faith-root over Faith-affix seems to be very persuasive. Note, however, that we still retain the place property of the root, while the manner property such as voicing or **con**tinuancy may be lost in suffixation. In **(9),** for example, only the voicing feature of the root is subject to change, not the place feature [dorsal]. Moreover, in (10), we lose the noncontinuancy and voicing of the root-final consonant **/v/** in the output, producing [p]. Nevertheless, the **labiality** of /v/ is preserved in the output [p]. Therefore, we may claim that the status of Faith-root as a **metacon**straint may still hold with respect to place properties. Considering this, I propose to decompose Root-faithfulness into two subconstraints, **Faith-root(place)** and **Faith-root(manner)** (or **Faith-root(voice)),** in that the faithfulness for root holds (and only) for place features. With this refinement, we can reanalyze the earlier accounts as follows. **Faith-affix(place)** and **Faith-affix(manner)** are represented as a single constraint, Faith-affix, for convenience.

(12)

/sek+ment/	Agree (voice)	Faith-root (place)	Faith-affix	Faith-root (manner-voice)
a. se[km]ent	*!			
b. se[pm]ent	*!	*!		
c. se[kŋ]ent			*!	
d. se[bm]ent		*!		
e. ☞ se[gm]ent				*

First, (12a) identical to the input is eliminated due to the fatal violation of Agree(voice). (12b) is the worst candidate due to the violation of two high-ranking constraints. (12c) is not acceptable due to the change of the voicing property of the affix, violating Faith-affix(voice). (12d) is worse than (12c) in that it violates the higher-ranking (metaconstraint) Faith-root(place). We can also reanalyze /deceive+tive/ → ***deception*** in (13).[5] Note that Faith-root(place) takes a crucial role to eliminate (13e).

(13)

/deceive+tive/	Agree (voice)	Faith-root (place)	Faith-affix	Faith-root (manner-voice)
a. dece[bt]ive	*!			*
b. dece[bd]ive			*!	*
c. dece[dt]ive	*!	*!		*
d. ☞ dece[pt]ive				*
e. dece[st]ive		*!		

Nevertheless, we need to examine the data in (11) more closely since /secceed+tion/ → *succe[ʃ]ion* should be considered to be another and a different case of coalescence.[6] Lee (2000) regards this example as a case against Faith-root since the stem-final consonant /d/ seems to be simply deleted. However, the input form of the suffix should be **/tjən/,** rather than /ʃən/ (Jensen 1993).[7] Thus, the output segment [ʃ] is neither the stem-final consonant nor the suffix-initial one. Moreover, there occurs a triple merger since the root-final segment /d/ and the affix-initial consonant /t/ are merged as a single consonant which is merged with the following **/j/** producing the palatal segment [ʃ] due to the constraint ***T+j** banning a non-palatal coronal before **/j/.** Thus, as shown in **(14),** the place property of the root **(i.e.,** stem) is still maintained in this case of triple merger, while the voice property is lost. Thus, we can show the tableau for ***succession*** in (15). *(I* will posit **/tjən/** as the input form for the **suffix,** while **/sək-se:d/** as the input stem form.)

(14) succeed + tion

succe[ʃ]on

(15)

/sək-se:d_i+t_2j$_3$ən/	Agree (voice)	*T+j	Faith-root (place-cor)	Faith-affix (voice)	Faith-root (voice)	Line-arity
a. səksɛ[d][ʃ]$_{2,3}$ən	*!					*
b. səksɛ[t]$_{i,2}$jən		*!			*	*
c. səksɛ[ʒ]$_{i,2,3}$ən			*			**
d. ☞ səksɛ[ʃ]$_{i,2,3}$ən				*		**

The first candidate **(15a)** forming an unusual consonantal sequence violates the top constraint. It also violates Linearity since the output segment [ʃ] corresponds to the input **/tj/** due to coalescence. **(15b)** violates ***T+j** due to the existence of **[tj]**. It also violates **Faith-root(place)** and Linearity due to the merger of /d/ and /t/. **(15c)** violates **Faith-affix(voice)** since the voice property of the suffix is lost. Moreover, as we get triple merger /d+t+j/ → **[ʒ]**, it violates Linearity twice. Finally, **(15d)** also violating Linearity twice is selected as the optimal output since **Faith-root(voice)** is the only other constraint it violates. In other words, the optimal output maintains the place property of the root **(i.e.,** stem) for giving up the voice property. Based on the observations made so far, it is argued that Faith-root is still maintained for place properties.

3. Coalescence in Korean Emphatic Suffixation

The status of Faith-root faces a more serious challenge in the so-called "emphatic" suffixation in Korean (Jun 1994). As shown in **(16),** certain emphatic words are made **from** disyllabic ideophones by adding one of the alternating allomorphs, i.e., *-tak, -tək, -lak, -lək,-cak, -cək.*

(16)

Base	Suffixed words	
k'olk'ak	k'ol.k'a-tak	'gulping down'
c^hal.k^hak	c^hal.k^ha-tak	'with a snap'
cil.p^hak	cil.p^ha-tak	'with squishing noises'
pəl.ləŋ	pəl.lə-tək	'falling onto one's back'
t'al.kil	t'al.ki-lak	'rattling'
k'u.mul	k'u.mu-lak	'moving slowly'
moŋ.kic	moŋ.ki-cak	'fingering'
man.cis	man.ci-cak	'fingering'

First, the suffix vowel varies between [a] and [ə], depending on vowel harmony. Thus, there is a correspondence relationship for vowel harmony between input and output, requiring the high-ranking inviolable constraint, Vowel Harmony.

(17) Vowel Harmony: The harmony feature of the emphatic suffix vowel should agree with that of the stem vowel.

Next, there are three alternations for the suffix-initial segment, i.e., [t, 1, c] which can be represented as **[-cont]** and **[+cor],** based on the assumption that the Korean **/c/** is an **affricate** having both **[+cont]** and **[-cont].** However, we use **/t/** as the input form for the suffix-initial consonant, considering its wider distribution of /t/ than those of the other ones N and **/c/.** Thus, we can posit **/tAk/** as the input form for the emphatic suffix in which /A/ has two variants [a] and **[a].**

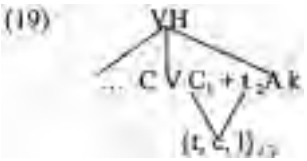
There is, however, a more intriguing fact in emphatic suffixation, i.e., the correspondence relation between the stem-final consonant and the **suffix-initial** one.

(18)

Coda(stem)	→	Onset(suffix)
n		l
k		t
l		l
c		c
s		c

Note that as **/n, l, c/** are [-continuant], the [n, **k]-[t], [c]-[c]** and [l]-[l] relations reflect the fact that the coda and the onset must agree in [continuant] feature, regardless of the sonority difference. ▾ ▾ the **[s]-[c]** case, however, we need a little trick, saying that the **affricate** [c] has both [-continuant] and [+continuant] features satisfying the coda-onset [continuant] agreement for both **[s]-[c]** and **[c]-[c]** cases. In other words, the [+continuant] part of the root-final **/s/** agrees with the corresponding [+continuant] feature of the **affricate /c/** in the output. Therefore, this is another case of consonantal coalescence in which a **suffix-**initial segment is merged with a root-final segment as a single consonant. Moreover, Faith-root plays an important role even for manner, i.e., voice or continuancy. The figure (19) shows the coalescence in Korean emphatic suffixation.

(19)



Finally, the addition of a syllable *–tAk* does not increase the number of the foot. In other words, as shown in (19), the two consonants are merged as a single consonant but the foot count of the input remains intact in the output. This is a general tendency applying in Korean partial reduplication as well. Thus, we posit **IDENT(Ft),** a prosodic constraint between input and output, requiring that the foot number of the input be preserved in the reduplicated output as well as in emphatic suffixation (Ahn **2000a).** Based on these considerations, therefore, we can posit our optimality analysis for an emphatic suffixation process in (21).

(20) IDENT(Ft): The foot count of the output is identical to that of the input.

(21)

/k'omcil$_1$+t$_2$Ak/	VH	IDENT (Ft)	Faith-root (place-lat)	Max	Linearity
a. (k'om)(cil$_1$)-(c$_2$ak)	*!	*!			
b. (k'om)(cil$_1$)-(l$_2$ak)		*!			
c. (k'om)(cil$_1$)-(t$_2$ak)		*!			
d. (k'om)(ci-t$_{1,2}$ak)			*!		
e. (k'om)(ci-c$_{1,2}$ak)			*!		*
f. ☞ (k'om)(ci-l$_{1,2}$ak)					*
g. (k'om)(ci-l$_2$ak)				*	

First, (21a) is the worst option since it violates the two top constraints. Due to the high-ranking IDENT(Ft), the next two candidates (21b, c) are also eliminated from further consideration. On the other hand, the next two candidates (21d, e) cannot be selected due to the violation of the Faith-root(place-lat) constraint. Therefore, there are two similar candidates (21f, g) are left for final evaluation and we take (21f) as the optimal output since it does not violate Max. In other words, as the place (i.e., lateral) property of the root is preserved in the output, Faith-root still holds for place in this case of consonantal coalescence.

We now move to a different case such as *mancis* → *man.ci-cak* in which [c] shows up as the coalesced segment.

(22)

/mancis$_1$+t$_2$ak/	Faith-root (place-lat)	Faith-root (cont)	Max	Linearity
a. (man)(ci-l$_{1,2}$ak)	*!	*!		
b. (man)(ci-t$_{1,2}$ak)		*!		*
c. ☞ (man)(ci-c$_{1,2}$ak)				*
d. (man)(ci-c$_1$ak)			*	

The first candidate (22a) violates the Faith-root(place-lat) since the coalesced segment shows up as a liquid absent in the input. (22b) violates Faith-root(cont) since the root-final consonant is [+cont], while the coalesced segment /ʧ/ is [-cant]. Therefore, the third candidate (22c) is selected as the optimal output since the [+cont] property of the root-final segment is shared by the merged segment /c/ represented as [+cont, -cont]. On the other hand, the last candidate (22d) is dropped out due to the violation of Max. As we have observed so far, the emphatic suffixation in Korean does not provide real evidence against Faith-root with respect to place properties (such as [lateral]) at least.

There, however, remains one further problem in which two candidates are tied in optimality evaluation.

(23)

/mi.k'in$_1$+t$_2$əŋ/	Faith-root (place-lat)	Faith-affix	Faith-root (voice)	Linearity
a. (mi.k'i-l$_{1,2}$əŋ)	*!	*		*
b. ☞ (mi.k'i-c$_{1,2}$əŋ)			*	*
c. ☞ (mi.k'i-t$_{1,2}$əŋ)			*	*

As (23e) and (23f) are tied for all constraints, we need a more refined Faith-root(place) constraint such as (24) for anteriority.

(24) Faith-root(place-anterior)
The [+anterior] property of the root in the input is to be maintained in the output.

(25)

/mi.k'in$_1$+t$_2$əŋ/	Faith-root (place-lat)	Faith-root (place-ant)	Faith-affix	Faith-root (voice)	Linearity
a. (mi.k'i-l$_{1,2}$əŋ)	*!		*		*
b. (mi.k'i-c$_{1,2}$əŋ)		*!		*	*
c. ☞ (mi.k'i-t$_{1,2}$əŋ)			*	*	*

In (25), we can finally choose (25c) over (25b) due to the role of Faith-root(place-anterior). As we have observed so far, we claim that the faithfulness of root can be maintained (at least for the place property) in those complicated cases of the Korean emphatic suffixation as well.

4. Additional Evidence: Reduplication in Indonesian

The preposed prefixation in Indonesian also supports the status of Faith-root in terms of place. As shown in the following example, *məN-* is prefixed to a root before forming reduplication (McCarthy & Prince 1995). As the prefix-final /N/ and a root-initial consonant are merged as a single consonant, it is another good example of consonantal coalescence. Therefore, we get [n] from /N+t/, [m] from /N+p/, and [ŋ] from /N+k/.

(26)

Root	*məN*-Root	məN-Root-RED	
tulis	manulis	mənulis-nulis	'write'
potoŋ	mamotog	məmotoŋ-motoŋ	'cut'
kira	mənjira	magira-ŋira	'guess'

For analyzing the data properly, we can posit the fallowing phonotactic constraint accounting for coalescence, as suggested in McCarthy & Prince (1995).

(27) *N+C: Any sequence of a nasal and a stop is not permitted in prefixation.

This constraint requires that a sequence of nasal and a stop not be allowed across a morpheme boundary. However, due to the identity constraint for nasal and Max, we need consonantal coalescence, rather than deleting one of the two consonants in the output.

In reduplication, on the other hand, the first syllable of a root is supposed to be suffixed to the base (i.e., *məN*-Root) for reduplication. However, the reduplicant takes the coalesced nasal, not the root-initial consonant as the initial segment. Thus we get the following forms of reduplication. (The subscipted B is used to represent a base, while R for a reduplicant.)

(28)

/məN$_1$-t$_2$ulis-RED/	*N+C	Faith-root (place)	Ident (nasal)	Ident-BR	Max	Linearity
a. mən-tulis$_B$-tulis$_R$	*!					
b. mə-m$_{1,2}$ulis$_B$-tulis$_R$		*!				*
c. mə-t$_{1,2}$ulis$_B$-tulis$_R$			*!			*
d. mə-nulis$_B$-tulis$_R$				*	*	
e. mə-n$_{1,2}$ulis$_B$-tulis$_R$				*		*
f. ☞ mə-n$_{1,2}$ulis$_B$-nulis$_R$						*

Observe that the place property of the root-initial segment is preserved not only in prefixation but in final reduplication.

Other examples showing the faithfulness for root can be found easily in Indonesian interposed prefixation as well. The only difference between the preposed and interposed prefixations is in the status of Ident-BR since even the optimal output does not show the base-reduplicant correspondence in interposed prefixation.

(29) Interposed prefixation /B-məN-RED/

pukul	pukul-mamukul	'hit (recip.)'
tari	tari-manari	'dance (recip.)'

(30)

/tari$_B$-məN$_1$-C$_2$VCV$_{RED}$/	*N+C	Faith-root (place)	Ident (nasal)	Ident-BR	Max	Linearity
a. tari-mən-tari	*!					
b. tari-mə-m$_{1,2}$ari		*!				*
c. nari-mə-n$_{1,2}$ari			*!			*
d. tari-mə-nari		*!		*	*	
d. ☞ tari-mə-n$_{1,2}$ari				*		*

5. Other Cases: Tagalog and Chumash

I will add two more cases showing that the place property of the root remains intact in coalescence. First, Tagalog reduplication shows a case of infixation in which the first CV of the root is infixed between a prefix and a root.

(31) Tagalog: paŋ-CV_{RED}-putul → pamu-mutul *pamu-putul

Just as in the case of Indonesian reduplication, the prefix-final nasal is merged with the infix-initial consonant producing [m]. Then the input segment /p/ of the root appears as the nasal [m] to meet the base-reduplicant identity (McCarthy & Prince 1995). Therefore, we can also observe that the place property of the root-initial segment is preserved not only in the reduplicant but in the output, while only the manner property (i.e., nasality) is changed.

Chumash shows a similar pattern in that the place property of the root remains intact in reduplication. As shown in the following example, the initial syllable (i.e., CVC) of the root is infixed to form a reduplicated word denoting plurality.

(32) k-CVC_{RED}-ʔaniš → k'an-k'aniš 'my paternal uncles' (*k'an-ʔaniš)

As in the Indonesian case, there is a phonotactic constraint, *C? prohibiting a sequence of a stop and a laryngeal consonant.[9] Thus, we get a coalesced segment like [k'] in an output. The following tableau shows the necessary constraints and their interactions.

(33)

/k-CVC_{RED}-ʔaniš/	*C?	Faith-root	Ident-BR	Max	Linearity
a. k-ʔan-ʔaniš	*!				
b. kan-ʔaniš		*!	*!	*	
c. k'an-ʔaniš			*!		*
d. ʔan-ʔaniš				*	
e. ☞ k'an-k'aniš					*

As shown in this tableau, coalescence occurs to obey *C? and the base-reduplicant identity relationship. Therefore, the optimal candidate (33e) shows a coalesced consonant violating Linearity. Moreover, the faithfulness for root holds in this case of Chumash reduplication as well.

5. Conclusion

So far, we have discussed various cases of consonantal coalescence in terms of the faithfulness for root. For this purpose, we first examined the English class 1

con- prefixation to introduce the notion and the role of Faith-root. Then, we discuss one possible counter-argument against Faith-root in English suffixation, where we noted an asymmetry relation between prefixation and suffixation with respect to Faith-root. In other words, the faithfulness for root is more prominent in prefixation than in suffixation. Here it was argued that the root faithfulness still holds in suffixation as well, especially for certain place properties. Therefore, I proposed to subcategorize Faith-root into two subtypes, Faith-root(place) and other Faith-root constraints such as Faith-root(manner). Then, we examined other cases of affixation to verify the status of Root faithfulness. For this purpose, we discussed the so-called emphatic suffixation in Korean in terms of consonantal coalescence. I also discussed the preposed/interposed reduplication in Indonesian. In discussing these two cases, we could not find any genuine case showing the dominance of Faith-affix over Faith-root, at least for place properties. Finally, we further discussed **a** couple of similar cases in Tagalog and Chumash from the same perspective.

Notes

[1] Observe that the number of segments in the input gets smaller in the output. Within the Optimality framework (McCarthy & Prince 1995), therefore, the output seems to violate one of the two major faithfulness constraints, Max, prohibiting deletion of input segments. A more careful look, however, would reveal that there is no violation of Max in a strict sense, since neither of the input segments (i.e., /k/ and /h/) has completely disappeared. Rather, their basic phonetic properties are preserved in the coalesced segment in the output and only the precedence relation between the two segments is violated. In other words, the linear sequence of input segments cannot be maintained in coalescence, violating Linearity.

[2] *Geminate: $*C_iC_i$ (Any sequence of two identical consonants is avoided within a morpheme or a morpheme boundary.)

[3] ***N+L**: No class I prefix ending with a nasal may appear before a root-initial liquid.

[4] This accou[illegible] faces a problem as vowel elision as shown below

/cello+ical/	Phono-constraint	Faith-affix	Faith-root
a. celloist	•!		
b. cellost		*!	
c. ☞ cellist			•

Considering that the plural form of ***cello*** is ***celli*** (in Italian), however, we seem to take a stem-final vowel as a kind of linking element as in the case of the vowel **"o"** in ***bibl-ical*** vs. ***bibli-o-graphy***.

[5] In fact, there should be a way to eliminate a possibly more optimal but incorrect candidate ***dece[ft]ive***. We might consider etymological account, saying that ***deceive*** was originated from the Latin word ***dēcipĕre***, while the noun form reception was originated from ***dēcipĕre→ deceptiōn-em***. Similarly, ***receive*** was originated from ONF ***receivre, receyvre*** or Old French ***reçoivre***. But the noun form reception was originated from Latin ***rēcipĕre→ receptiōn-em***.

[6] Following Lee (2000), we might assume that the root-final /t/ is simply deleted before the **affix**-initial [ʃ]. But we still have to explain why /t/ in ***tion*** still remains.

[7] More strictly speaking, however, there is no evidence for **/-tjən/** or **/-ʃən/** as the input form for the **suffix** since there can be no explanation why we get ***success*** from another verb, ***succeed*** 'to do well'. In other words, these are the cases of irregular word formation synchronically. It is thus presumed that the archaic verb ***success*** was used **as** the base for ***succession.***

See Ahn (1998) for detailed discussion of the noncontinuancy of [l] in Korean.

This constraint requires other laryngeal consonant /h/ be merged with a preceding consonant. Thus the output /k'awa?/ 'my maternal aunts' corresponds to the input /k-hawa?/.

References

Ahn, Sang-Cheol. 1998. ***An Introduction to Korean Phonology.*** Seoul: Hanshin Publishing Co.

Ahn, Sang-Cheol. 2000a. "Reduplication in Optimality Theory: Input-reduplicant faithfulness", ***Korean Journal of Linguistics,*** 25.1: 103-127.

Ahn, Sang-Cheol. 2000b. "Root-faithfulness and coalescence in English prefixation", ***Proceedings from the 2000 Seoul International Conference on Language and Computation:*** 133-143.

Ahn, Sang-Cheol. 2000c. "Consonantal coalescence in affixation: English Class 1 prefixation", to appear in ***Language Research.***

Beckman, Jill. 1997. ***Positional Faithfulness.*** Doctoral dissertation, UMass.

Borowksy, Toni. 2000. "Word-faithfulness and the direction of assimilation", To appear in ***The Linguistic Review,*** 17.

Casali, R. F. 1997. "Vowel elision in hiatus contexts: Which vowel goes?", ***Language,*** 73.3: 493-533.

Chomsky, Noam and Morris Halle. 1968. ***The Sound Pattern of English.*** New York: Harper & Row.

Jensen, John. 1993. ***English Phonology.*** Amsterdam: John Benjamins Publishing Co.

Jun, Jongho. 1994. "Metrical weight constituency in reduplication", *Phonology,* 11: 69-88.

Kiparsky, Paul. 1985. "Some consequences of Lexical Phonology", ***Phonology,*** 2: 85-138.

Lee, Jae-Young. 2000. "The root-affix faithfulness metaconstraint and English Phonology", Paper presented at Spring meeting of the Linguistic Association of Korea.

Lombardi, Linda. 1995. "Why place and voice are different: constraint interactions and featural faithfulness in Optimality Theory", Ms. University of Maryland.

McCarthy, John & Alan Prince. 1995. "Faithfulness and reduplicative identity", ***University of Massachusetts Occasional Papers*** 18: ***Papers in Optimality Theory.*** 249-384.

McCarthy, John & Alan Prince. 1997. "Faithfulness and identity in prosodic morphology", Ms. ROA-216.

Oxford English Dictionary. 1994. CD version (2nd Edition). Oxford University Press

Prince, Alan & Paul Smolensky. 1993. ***Optimality Theory.*** Ms. Rutgers University.

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Projecting Possession in the Noun Phrase

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Prenominal possessive constructions in Romance languages surface generally in one of two distinct patterns: (a) article + possessive + noun as in Italian and Portuguese, shown in (1a) for Italian and (b) possessive + noun as in French and Spanish, shown in (1b) for Spanish.

(1) a. la mia casa (Italian)
the my house
b. mi casa (Spanish)
my house

These constructions, traditionally treated as adjectives, do demonstrate adjectival-like agreement with the possessed noun with respect to number and in some cases gender, however, possessives also demonstrate agreement with the possessor with respect to person. The possessive appears to collapse two-three functional categories. The number depending on whether AGR is further decomposed into Number and Gender. For French the prenominal possessive shows agreement in number and gender for lst, 2nd and 3rd person singular, but only shows number agreement for lst, 2nd and 3rd person plural. The Spanish prenominal possessive shows agreement in number and gender only for 1st and 2nd person plural; all other forms show agreement only in number. Note the similarity to the agreement pattern of the definite article. The singular definite article in French shows overt gender agreement, but non-overt number agreement; whereas, the plural definite article shows overt number agreement, but non-overt gender agreement. However in Spanish the definite article shows overt gender agreement in both the singular and the plural, but only overt number agreement in the plural.

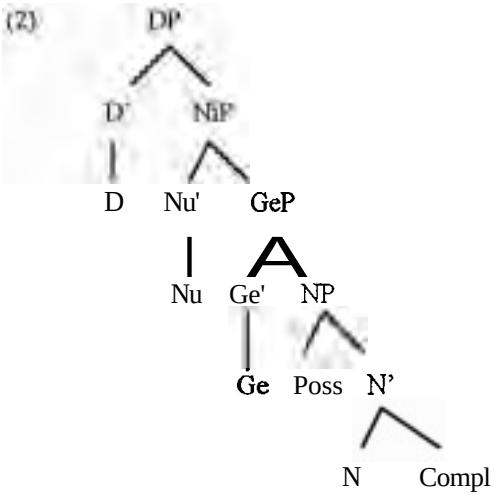
1.0 Adjectival Status and Structure

If we consider the partly adjectival status of possessives, then we need to account for their structural position in relation to the structural position of

adjectives. Bernstein (1993) accounts for the different classes of adjectives by proposing multi-adjunction sites for adjectives. These include adjunction to a Number Phrase, adjunction to NP and adjunction to an XP.

While these structures allow for an account of the differences in readings between the pre- and postnominal adjectives by providing distinct syntactic positions, they do not provide an account for the derivation of the semantic interpretation. These possible adjunction sites for adjectives do not appear to be possible sites for the possessive.

Picallo (1994) proposes that the possessive in Catalan is generated in the Spec of NP, as shown in (2). Like Valois (1991) who argues for a functional category between D and N suggesting that this category is a Number Phrase containing the number features of the DP, Picallo also assumes a **Nu(mber)** Phrase as well as a **Ge(nder)P** for Catalan with the noun moving up through **GeP** and then **NuP.** If the noun moves and the possessive stays in situ, the result will be a postnominal possessive. When the possessive moves up first, the result will be the prenominal possessive.



Expanding on the structure suggested by **Picallo (1994),** shown in **(2),** the possessive could be generated in the spec of NP moving then to **GeP** for checking **gender** and then to NuP to check number. Since D following **Stowell** (1987) marks **referentiality,** the reference (person) would be checked there. Evidence for a separate projection for person comes from the possessive constructions in Isthmus Zapotec, a language spoken in Mexico. Here the possessive and the person morphemes are separate, as shown in (3).

(3) a. s-palu-be
poss. stick 3rd person sg.
his stick
b. s-palu-lu
poss. stick 2nd person pl.
your stick

However, Picallo maintains essentially an adjectival analysis for possessives in Catalan and possessives are only nominally adjectival.

2.0 Pronominal Status and Structure

Valois (1991) notes the pronoun like properties of the French possessive "adjective". These properties are also evident in Spanish, Italian, Portuguese, and English.

21 Binding

First, the possessive "adjective" can be bound by a c-commanding QP, as shown in (4).

(4) a. La photo de chaque$_i$ photographe de sa$_i$ ville préférée. (Fr)
The picture of each photographer of his favorite town.
b. La foto de cada$_i$ fotógrafo de su$_i$ ciudad favorita. (Sp)
c. La fotografia di ogni$_i$ fotografo della sua$_i$ citta favorita. (It)
d. A foto de cada$_i$ fotografo da sua$_i$ cidade favorita. (Po)
e. The picture of each$_i$ photographer of his$_i$ favorite town.

The second property possessives have in common with pronouns is the ability to bind a reflexive, as shown in (5). The binding of reflexives is not possible with referential adjectives.

(5) a. Son$_i$ portrait de lui-même$_i$ (Fr)
his picture of himself
b. Su$_i$ foto de el mismo$_i$ (Sp)
c. La sua$_i$ fotografia di sé stesso$_i$ (It)
d. ? a sua$_i$ foto de si mesmo$_i$ (Po)
e. his$_i$ picture of himself$_i$

2.2 Weak Crossover Effects

A further test for pronominal status involves weak crossover effects. The ungrammaticality of wh-sentences with the wh-trace co-indexed with a preceding pronoun has been accounted for under the leftness condition (Chomsky, 1976; Koopman and Sportiche, 1982). The ungrammaticality decreases in the case of a non c-commanding pronoun as in (6).

(6) a. Who$_i$ loves his$_i$ mother?
b. *Who$_i$ does his$_i$ mother love ti?

Possessives in the languages under discussion vary in their behavior with respect to WCO, as seen in (7).

(7) a. Quem$_i$ ama a sua$_i$ mãe? (Po)
*Quem$_i$ a sua$_i$ mãe ama ti?
b. Qui$_i$ sa$_i$ mére aime-t-elle? (Fr)
Qui$_i$ est-ce que sa$_i$ mére aime ti?
c. Quien$_i$ ama a su$_i$ madre? (Sp)
A quien$_i$ ama su$_i$ madre t$_i$?
d. Chi$_i$ ama sua$_i$ madre? (It)
*Chi$_i$ sua$_i$ madre ama ti?

In Italian, Portuguese, and English WCO effects can be observed; however, these effects are not present in French and Spanish. In Spanish and French because it is possible to get a pair list reading in response to the question, there are no WCO effects with possessives, bringing into question their status as pronouns. If, as claimed by Giorgi and Longobardi (1991:155), possessives are adjectives in Italian, then the WCO effects observed are difficult to explain.

A possible explanation arises, not from their status as adjectives, against which we have argued (Antrim 1996, 1998), but from the availability of stylistic inversion for both Italian, as seen in (8a) and Portuguese, as seen in (8b).

(8) a. Chi$_i$ ama$_j$ sua$_i$ madre tj ti?
b. Quem$_i$ ama$_j$ a sua$_i$ mãe tj ti?

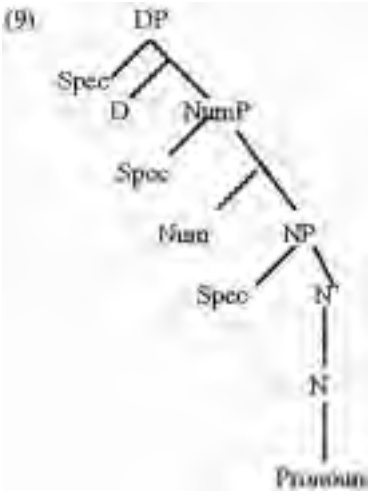
Taking into account stylistic inversion, Italian and Portuguese would pattern like French and Spanish with respect to WCO effects.

2.3 Pronominal Structures

If an adjectival position is not available for the prenominal possessive, then given their prenominal behavior could they be generated in a pronominal position?

2.3.1 ***Koopman***

Koopman (1993) suggests that pronouns always occur in either Spec or Agr positions. She proposes both an AgrP and a NumP as functional projections of DP. Pronouns take the place of a noun. They are specific and they have both number and person features. Having these features, they must be checked. They can be checked either by head movement to a functional category or by movement of some projection containing the pronoun to a Spec position where these features would be checked under spec-head agreement. She claims that the basic structure is the same crosslinguistically with the surface variations in order accounted for under movement. The internal structure she proposes for DP is given in (9).



In her discussion of pronouns she omits person features, but suggests that these should project in PerP between D and Num. In addition to the variation from movement, languages would also vary as to which functional projections are overt and which are what Koopman calls silent (covert). She suggests that in English NumP is always overt and D and Agr are silent.

Since possessive prenominals do not take the place of a noun, they can not generated in N; could they be generated in Spec of NP as the external argument of a noun and then move via spec-to-spec movement to check their features?

2.3.2 Cardinaletti

Cardinaletti (1994) looking at Romance, as well as German pronominals proposes a variation in internal structure depending on whether the pronominals are strong pronouns or clitic pronouns. According to her analysis strong pronouns are projected as full DPs and have the lexical category NP embedded under DP; whereas, clitic pronouns are projected as functional projections. She further distinguishes between clitics and weak pronouns, which contain a further functional projection. While her analysis is concerned with object pronouns, 3rd-person object pronouns in particular, she suggests that the analysis could be extended to subject pronouns. She does not consider the pronominal status of possessives.

The prenominal possesives under consideration can be argued to be clitic-like; however, they show more than case or agreement features, they also reflect reference. While this would appear to be captured by projecting the possessive under D^0, it fails to adequately capture the semantics involved.

3.0 Possessives as Predicates

Setting aside for a moment the pronominal properties of possessives, let us reconsider their status as adjectives. It appears that the possessive forms are adjectival in only one respect: agreement. According to Napoli (1989), gender-number agreement represents evidence of a predication relationship.

One aspect of possessives that has proved problematic is that the possessive demonstrates agreement with the possessor with respect to person and agreement with the possessed with respect to number and possibly gender. If we analyze possessives as two-place predicates then both these relationships can be realized: the pronominal nature of the possessive from a variable in Spec position being coindexed for person with the possessive and the adjectival nature of the possessive from the complement variable being coindexed with an NP providing number and gender agreement. If we take possession as an event of belonging, then as an event it requires participants. Possession then assigns two, what Napoli (1989) refers to as semantic roles as opposed to theta-roles: possessor and possessed, The possessive relationship would then be represented semantically as in (10b).

(10) a. my book
b. POSS (I, book)

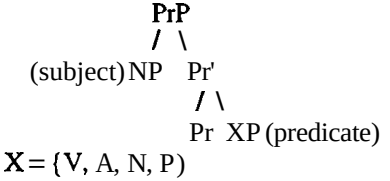
This semantic representation entails two semantic roles for the possessive: the possessor (I) and the possessed (book). In keeping with X-theory, syntactically

the possessive is generated in its own projection with the possessor in spec of PossP and the possessed as a complement reflecting the external and internal arguments of a two-place predicate.

While the structure suggested by Picallo, shown in (2), captures the external argument-like status of the possessive, it still maintains an adjectival analysis of the possessive and does not reflect the semantics of the prenominal possessive as a two-place predicate, and as such must be abandoned

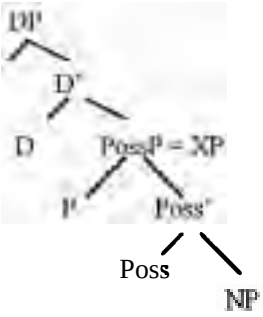
To capture both the adjectival and pronominal behavior of prenominal possessives, as well as to account for the syntactic variation in prenominal possessives in Romance languages and the semantics of the possessive, I propose, following Bowers (1993), given in (11) that the prenorninal possessive is projected in an XP as a predicate structure with two semantic roles: possessor and possessed.

(11)



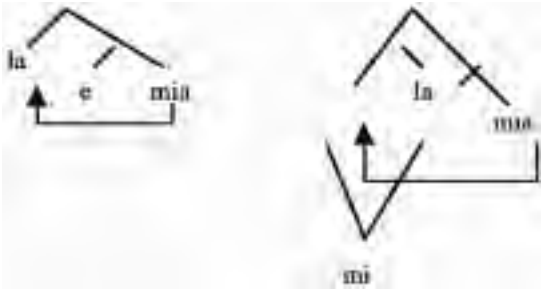
The predication relation then holds between the semantic role in Spec and the complement of Pr which would be the possessed. Because of the adjectival properties of the possessive, it must be in a configuration which allows for agreement. Because of the pronominal properties, it must be in a configuration which allows for this feature to be checked. The former requires a position in relation to the noun with which it shares agreement features, while the latter requires a position in relation to the Determiner, which licenses its referentiality. The adjectival-like agreement of the possessive would reflect the predication relation as claimed by Napoli (1989), while the pronominal reference would be checked in D, following Chomsky (1992). This Possessive Phrase would have as its specifier the possessor, as its head the possessive and as its complement the possessed noun, as shown in (12). Applying Napoli's semantic roles to predication structure what would be the external argument is in the case of possessives the semantic role of possessor which is projected in the Spec position. The predication relation then holds between the semantic role in Spec and the complement of Pr which would be the possessed.

(12)



Via Spec-Head agreement, the possessive agrees in person with the possessor. The possessive in French, Spanish and Italian raises via head-to-head movement to D to check referentiality, following Chomsky (1992), where in French and Spanish the possessive and the definite article merge, as suggested by Vergnaud and Zubizarreta (1992) for pronouns and determiners, prior to Spell-out forming a clitic-like element with reduced agreement, as shown in (13a). In Italian, the possessive also raises to D where it incorporates with D, but does not merge retaining the form article + possessive, as shown in (13b). In the case of Italian the possessive which has been considered an adjective (Giorgi and Longobardi, 1991) has undergone a process of pronominalization by incorporating the adjective into the empty noun site. This accounts for the pronoun-like behavior of the Italian possessive.

(13) a. Incorporation b. Merger



Since a syntactic merger assumes N-movement, the merger in Spanish is syntactic and occurs late at a point prior to spell-out. For French the merger is a lexical phenomenon resulting in the syntactic effect of no postnominal possessives. This structure is able to capture the predicative relationship expressed by the possessive, while allowing for both the pre- and postnominal structures and their subtle variation in interpretation.

If we check the pronominal reference in D, the problem remains as to how to account for the presence of the article with the possessive in Italian and Portuguese. I will propose that in Italian and Portuguese the pronominal reference is moved to head position with the determiner in Spec of DP. Then the article and possessive would agree under Spec-head. I suggest that this is also the case for French and Spanish, where there is no overt article. If, as Kayne **(1993)** suggests, the specifier is an adjoined position, there I propose that the article and the possessive are conflated or merged in French and Spanish, as suggested by Vergnaud and Zubizarreta **(1992)** for French as shown in **(14);** with the merged form retaining the features both have in common.

(14) a. [DP pronoun[D' determiner]] → suppleted form
b. eux + les → leurs
c. eux + le → leur

Proposing a merger of the definite article with the possessive in French and Spanish will account for the surface variation in possessives in Romance languages.

The variation found in languages will not be a result of different structures, but rather the extent to which the basic structure must be expanded to reflect the morphology of a given language, as well as, capture the semantics involved. To this end we are proposing a PossP reflecting the POSS as a two-place predicate.

In Spanish and French, the determiner and the possessive, through a process of cliticization and morphological merger are reduced to the present day prenominal possessive. In the case of the postnominal possessive in Spanish, the noun has moved as Cinque **(1993)** proposes, raising to D, following Longobardi **(1994),** and the possessive remains in situ. Since the possessive would not be adjoined to D, it would not acquire a definiteness feature thus permitting a partitive-like interpretation postnominally; although, it would still be within the feature checking domain for referentiality.

4.0 Definiteness Effects

The merger of the article and possessive in French and Spanish accounts for the definiteness effects found with the prenominal possessive in these languages as well as their incompatibility with an article. The lack of merger in the case of Italian permits the use of the possessive without the article accounting for the lack of definiteness effects with the possessive.

4.1 Existential Constructions

Italian and Portuguese possessives can occur in an environment where definites are excluded. One such environment involves existential "there". "There" insertion is not possible with a definite, as in (15) for English.

(15) a. There is a man in the garden.
b. *There is the man in the garden.

Note, however, that existential constructions have been questioned as a diagnostic of indefiniteness. More than one reading is possible with ***there*** constructions in English. Woisetschlaeger (1983) observes three possible readings: existential, generic and list. In the latter two - generic and list - a definite is possible, as shown in (16).

(16) a. There is the wine we were going to use in the desert. (list)
b. There was the air of the successful businessman about him. (generic)
(Woisetschlaeger, 1983)

If we discount these two possible readings and concentrate only on an existential reading; then, following Milsark (1974) ***there*** predicates existence excluding definiteness which presupposes existence. It would follow, then, that if the possessive constructions, under discussion here, are used in an existential construction, their definiteness should be revealed.

In Spanish these existential constructions with possessives are not possible, as in (17).

(17) *Hay **mis hermanas** en el parque.
There are my **sisters** in the park

This is also the case for French, as in (18).

(18) *Il y a mes **soeurs qui arrivent.**
There are my sisters that arrive.

This follows from the definiteness of the possessive in both French and Spanish. Italian and Portuguese, on the other hand, allow for the possessive to occur in existentials. In both languages the possessive occurs in these constructions without the article, suggesting that the possessives are not marked for definiteness, as seen in (19) for Italian and (20) for Portuguese.

(19) Ci **sono** sorelle **mie che arrivano** domani.
There are sisters my that arriving tomorrow

There are sisters of mine that are arriving tomorrow.

(20) Tem amigos meus que gostam de fumar.
have friends my that like to smoke
There are friends of mine that like to smoke.

Grimshaw (1990), among others, suggests that the definiteness of a phrase is determined by that of its possessive, as in (21) (her 20).

(21) a. There's a man's shirt on the chair.
b. *There's the man's shirt on the chair.

The NP in these cases has the definiteness of the possessive despite the fact that the determiner is associated with the possessor (man) and not the head (shirt). If this is the case then the possessives permitted in existential expressions would also be indefinite. Note that it is only the postnominal form of the possessive without the article that can occur in existential expressions in Spanish, as shown in (22).

(22). a. *Hay tus amigos en el jardin.
There are your+pl friends+pl+masc in the garden
b. Hay amigos tuyos en el jardin.
There are friends your+pl+masc in the garden
There are your friends in the garden.

4.2 Partitive Constructions

A second environment where definiteness effects (DE) can be observed involve partitive. Partitive constructions in French and Italian allow for en/ne-cliticization only when the NP is indefinite, as shown in (23) for French.

(23) a. *Il s'est construit les maisons.
There is built the houses.
b. Il s'est construit trois maisons.
c. Il s'en est construit trois.

The definiteness of the possessive predicts that en/ne-cliticization with a possessive should be possible in Italian, but not in French. This is the case, as seen in (24).

(24) a. Ne ho visto uno mio.
of them I have seen a my (It)
b. *Ne ho visto il mio.

c. *J'en ai trové la mienne. (Fr)
d. *J'en ai trouvé ma.

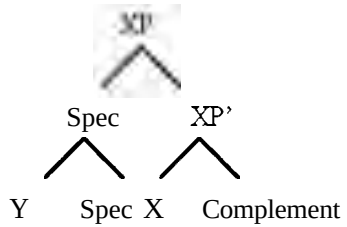
Based on their occurrence in existential contexts, as well as the evidence from ne-cliticization, possessives in Italian and Portuguese can not be marked for definiteness.

5.0 Conclusion

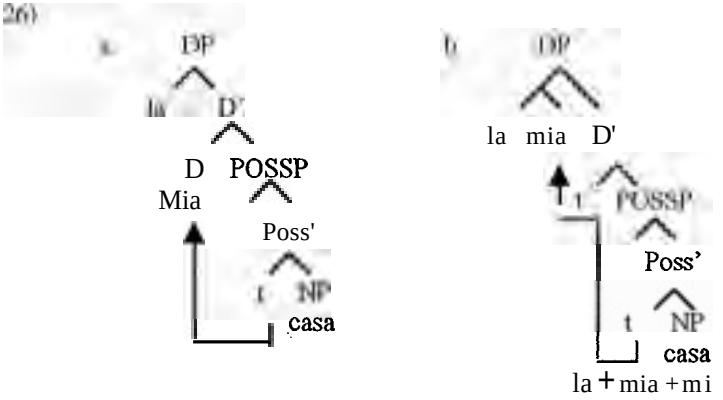
Following Bowers (1993), I project the possessive within a predication structure headed by POSS. This is consistent with Cinque (1993) placing adjectival elements to the left of the noun and then deriving variation as to surface placement via movement of the noun. Because of the nominal adjectival properties of the possessive, it must be in a configuration which allows for agreement. Because of the pronominal properties of the possessive, it must be in a configuration which allows for this feature to be checked. The former requires a position in relation to the noun with which it shares agreement features (i.e. gender, number), while the latter requires a position in relation to the Determiner, which licenses its referentiality.

The licensing (or checking) domain of a head, (Chomsky 1992-1995, Marantz 1995)), includes four configurations representing relationships to a head: the Specifier, an adjoined head, an adjunction to the maximal projection of a head, and an adjunction to the Specifier. If as I claim the determiner and the possessive merge in Spanish and French, then they must be in a configuration conducive to merger and that position is as an adjunction to Specifier, as in (25).

(25) Adjunction to Specifier



In Italian and Portuguese while the determiner and the possessive form a constituent, they still permit a limited amount of material to intervene. They are projected in an incorporation configuration, as shown in (13a). Looking again at the structure proposed, repeated here as (26), we can account for the Spanish and French prenominal possessive construction, as well as the Italian and Portuguese prenominal possessive construction.



The possessive is projected in the Head of POSSP as a predicate. The agreement features are checked in their respective positions via Spec-Head agreement. Finally the possessive moves to the checking domain for its pronominal feature(s) and raises to the Head of DP in Spanish and French and then moves to the spec of DP, following Martin (1995) where I claim it adjoins to the determiner in Spec of DP and merges with the determiner, as shown in (26b). In Italian and Portuguese the possessive raises to the head of DP and does not adjoin. as shown in (26a).

References

Antrim, Nancy Mae. 1996. On the status of possessives. Ph.D. Dissertation: USC.

Antrim, Nancy Mae. 1998. "Adjective or Pronoun: the Status of Prenominal Possessives" in *Proceedings of* 16th *International Congress of Linguists.* B. Caron, ed. New York: Elsevier.

Belletti, Adriana. 1990. *Generalized Verb Movement.* Rosenberg and Sellier.

Bernstein, Judy. 1993. Topics in the Syntax of Nominal Structure Across Romance. PhD dissertation, CUNY.

Bowers. John 1993. "The Syntax of Predication." *Linguistic Inquiry* 24: 591-656.

Cardinaletti, Anna 1994. "On the internal structure of pronominal DPs.". The *Linguistic Review* 11.3-4,195-219.

Chomsky, Noam. 1970. "Remarks on nominalization" in Jacobs, R. and P.S. Rosenbaum (eds.), *English Transformational Grammar,* 184-221.

Chomsky, Noam. 1976. "Conditions on rules of grammar." *Linguistic Analysis* 2:303-351.

Chomsky, Noam. 1992. A *Minimalist Program for Linguistic Theory.* MIT Occasional Papers in Linguistics 1, Cambridge.

Chomsky, Noam. 1995. The *Minimalist Program.* Cambridge: MIT Press.

Cinque, Guglielmo. 1993. On the evidence for partial N movement in the Romance DP. ms. Universita degli Studi di Venezia.

Giorgi, Alessandra and Guiseppe Longobardi. 1991. *The Syntax of Noun Phrases.* Cambridge University Press.
Grimshaw. Jane. 1990. *Argument Structure.* Cambridge: MIT Press.
Hudson, Wesley. 1994. Pragmatic Constraints on Binding into Noun Phrases. PhD dissertation, USC.
Kayne, Richard. 1994. *The antisymmetry of syntax.* Cambridge: MIT Press.
Koopman, Hilda. 1993. The internal and external distribution of pronominal DPs. ms. UCLA.
Koopman, Hilda. and Dominique Sportiche. 1982. "Variable and the bijection principle." *The Linguistic Review 2:* 365-91.
Longobardi, Guiseppe. 1994. Reference and Proper Names: a Theory of N-movement in syntax and logical form. ms. Università di Venezia.
Marantz, Alex. 1995. "The Minimalist Program" in *Government and Binding Theory and the Minimalist Program.* G. Webelhuth, ed. Cambridge: Blackwell.
Martin, Juan. 1995. On the syntactic structure of Spanish noun phrases. PhD dissertation: University of Southern California.
Milsark, Gary. 1974. Existential Sentences in English. Doctoral dissertation MIT. Cambridge, Mass.
Napoli, Donna Jo. 1989. *Predication Theory: a case study for indexing theory.* Cambridge: Cambridge University Press.
Picallo, Caune. (1994) *Possessive pronouns in Catalan and the Avoid Pronoun Principle.* Catalan Working Papers in Linguistics. U.A.B.
Stowell, Ti . 1987. Subjects, Specifers, and X-Bar Theory. ms. UCLA.
Valois, Daniel. 1991. The Internal Syntax of DP. dissertation UCLA.
Vergnaud. Jean-Roger and Maria Luisa Zubizarreta. 1992. "The definite determiner and inalienable constructions in French and in English." *Linguistic Inquiry* 23:4.
Woisetschlaeger, Erich. 1983. "On the Question of Definiteness in 'An Old Man's Book." *Linguistic Inquiry* 14:1.

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Metrical Pauses and the Prosodic Structure of Japanese Poetry*

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1 Introduction

The traditional poetic meters haiku and tanka provide evidence for the prosodic role of phonological silence and its interaction with syntactic factors. Previous analyses agree that the unit of rhythm when reciting Japanese poetry is the mora. A well-known prosodic constraint on Japanese poetry involves the number of moras in a line.' Haikus and tankas for example must consist of sequences of 5-7-5 and 5-7-5-7-7 moras respectively.

However, it is argued that silence also plays a crucial role in the rhythm of poetry. Abercrombie (1965) and Hayes and MacEachern (1998) state that pauses complete the rhythm of poetry. Both the reader and the hearer perceive beats during silence as well as during audible strings, and the pauses reinforce the rhythm of the poem; thus the specific length of pauses is essential. Recent research has suggested that the location of pauses is crucial in Japanese poetry as well. These analyses have not agreed on the length or the location of these pauses, however. For example, Okai and Kaneko (1963) claim that there is no pause in a line with seven overt moras (1a), while Sakano (1996) among others argues that there is a monomoraic pause (lb). (✖ indicates a monomoraic pause.)

(1) a. hurisake mireba 'if (one) looks up'
turn-up look-if
b. hurisake mireba✖

Among those who argue for a monomoraic pause in lines with seven overt moras as in (lb), the location of the pause is controversial, as exemplified in (2).

(2) a. kawazu tobikomu✖ 'a frog jumps into'
frog jump-into
b. kawazu✖ tobikomu

c. ✖ kawazu tobikomu

Matsuura (1991) states that a monomoraic pause can occur line-finally (2a), Bekku (1977) argues that it occurs line-medially (2b), and Kogure and Miyashita (1998) claim that it appears line-initially (2c). As I discuss in §2, all such claims and accounts concerning the rhythm of poetry are unsatisfactory.

In order to resolve these problems I conducted a phonetic experiment, whose data and results are introduced in §3.[2] Based on the results of the experiment I argue that each line consists of eight moras, and that the location of the pauses in a given line is determined by the interaction of the syntactic structure of the line and the phonological constraints of Japanese poetry. In §4 I propose a hierarchically-organized prosodic structure for poetic meters, and provide an analysis of the length and the location of the pauses within Optimality Theory (Prince and Smolensky 1993, McCarthy and Prince 1993a-b) (hereafter OT).

2 Previous Analyses

In this section I introduce the relevant previous analyses of the rhythm of traditional Japanese poems. There are both phonological and phonetic accounts for the length and the location of pauses; however, these analyses disagree with each other, and neither type is satisfactory. In the following sections I consider the accounts for the length and the location of pauses in turn.

2.1 The length of pauses

Previous analyses can be divided into two major groups with respect to pause length. One group, represented by Okai and Kaneko (1963), argues that a line with seven overt moras is longer than a line with five overt moras. They claim that there is a brief pause after a line with five overt moras, while there is none after a line with seven overt moras. There is thus no correlation between the number of overt moras and the length of pauses.

On the other hand the other group, represented by Matsuura (1991), Bekku (1977), Sakano (1996), and Kogure and Miyashita (1998), states that every line is actually eight moras long; thus there is an eight-mora template, with audible moras being augmented by pauses. In other words, lines with five audible moras also contain three moras of silence, and lines with seven audible moras also include a monomoraic pause, as shown in (3).

(3)	1	2	3	4	5	6	7	8	← # of moras
line 1	ma	tu	si	ma	ya	✖	✖	✖	'Oh, Matsushima!'
line 2	a	a	ma	tu	si	ma	ya	✖	'Ah, Matsushima!'
line 3	ma	tu	si	ma	ya	✖	✖	✖	'Oh, Matsushima!'

However, those who argue for the eight-mora template do not agree on the location of these silent rnoras.

2.2 The location of pauses

One such point on which previous proposals differ can be seen in lines containing a monomoraic prosodic word (hereafter PrWd).[3] When a line consists of a monomoraic PrWd plus a six-mora PrWd (hereafter a "1-6 structure"), as in ***yo-omotakikana*** 'how heavy the night is', Sakano (1996) claims that the pause appears **after** the monomoraic PrWd **(4a),** whereas Kogure and Miyashita (1998) argue that it occurs line-initially (4b).[4]

(4)	1	2	3	4	5	6	7	8
a.	yo	✖	o	mo	ta	ki	ka	na
b.	✖	yo	o	mo	ta	ki	ka	na

Another controversial case involves 3-4 structures such as ***kawazu-tobikomu*** 'a frog jumps into', as shown in (5).

(5)	1	2	3	4	5	6	7	8
a.	ka	wa	zu		to	bi	ko	mu
b.	✖	ka	wa	zu	to	bi	ko	mu
c.	ka	wa	zu	✖	to	bi	ko	mu
d.	ka	wa	zu	to	bi	ko	mu	✖

Kumashiro (1968) states that such lines are recited by lengthening each mora of the first **trimoraic** PrWd so that it has the length of four moras in total; this is followed by the four-mora PrWd recited with normal tempo, as shown in **(5a).** Sakano (1996) and Kogure and Miyashita (1998) on the other hand claim that the pause occurs at the beginning of the line, as shown in **(5b). Bekku** (1977) argues that the pause is inserted between the **two PrWds (5c).** Finally, Matsuura (1991) states that it can appear at the beginning of the line **(5b),** between the **PrWds (5c),** or at the end of the line **(5d).**

2.3 Phonetic **analyses**

A crucial problem with the claims presented thus far is that they find no phonetic support; their arguments seem to rely solely on the intuitions of the authors. In response to this problem, Lehiste (1997) measured the length of each line and each pause in 19 haikus. She found that there is no correlation, such as temporal compensation, between overt moras and pauses. This report was based on only one native speaker of Japanese, however. As I discuss in footnote 9, poetic recitation is subject to individual variation within a certain

range. It is therefore not desirable to make generalizations based on one subject's recitation.

Cole and Miyashita (1999) conducted a larger experiment in which they recorded 5 tankas recited by 5 native speakers of Japanese. Based on the results of this study they claim that each line has an eight-mora template. However, their experiment does not state where the pauses are inserted by the test subjects. The two phonetic experiments introduced in this section do not agree with each other. Their claims are not satisfactory as they do not state where the pauses occur, or explain why the pauses occur where they do.

2.4 Phonological analyses

Three recent articles have attempted to provide phonological answers to these larger questions, but each encounters fatal problems. Bekku (1977) argues that the eight-mora template consists of four feet, each of which consists of two moras. He claims that the left edge of each PrWd must coincide with the left edge of a foot. Under this analysis a monomoraic pause is inserted line-internally in 1-6, 3-4, and 5-2 structures, as shown in (6a-c), respectively.[5] (@ and ❍ indicate audible moras. Foot boundaries are demarcated by vertical lines.)

(6)

a.	1-6	|●✖|❍❍|❍❍|❍❍|		
	e.g.	|yo✖|*omo*|*taki*|*kana*|	.	'how heavy the night is'
b.	3-4	|●●|●✖|❍❍|❍❍|		
	e.g.	|kawa|zu✖|*tobi*|*komu*|		'a frog jumps into'
c.	5-2	|●●|●●|●✖|❍❍|		
	e.g.	|hoto|togi|su✖|*naku*|		'a little cuckoo chirps'[7]

Sakano (1996) proposes a structure for the line template that is somewhat different than what Bekku proposes. For Sakano the eight-mora template consists of two colons, each of which consists of two feet, and each foot consists of two moras. He proposes the two restrictions in (7) to account for the location of pauses.

(7)
a. A pause must not be inserted between PrWds in a line.
b. A foot containing two moras from different PrWds must not be followed by another foot containing two overt moras.

Leaving aside the fact that it is unclear how Sakano incorporates colons into his analysis, and that (7b) is completely arbitrary and unmotivated, his analysis predicts that a pause should appear line-initially in 1-6 structures, as shown in (8).

(8) a. *|●×|○○|○○|○○|
b. *|●○|○○|○○|○×|
c. √|×●|○○|○○|○○|

(8c) should win because (8a) violates (7a), the ban on line-internal pauses, and (8b) violates (7b), because the initial foot contains two moras from different PrWds, and this foot is followed by a foot containing two overt moras. We therefore expect that (8c) should win, but as I mentioned in 2.2, Sakano (1996) claims that a line-internal pause occurs instead. His explanation is puzzling: "a brief break is inserted after a monomoraic word, and this does not contradict the proposed restrictions, because this break is not a pure pause" (144-145). Sakano's analysis is obviously incoherent, but this incoherency is required by the basic principles of his theory in (7).

Note also that Sakano's analysis predicts that a pause can occur at either edge of the line in 5-2 structures, as shown in (9).

(9) a. |●●|●●|●○|○×|
b. |×●|●●|●●|○○|

Both (9a-b) obey the restrictions in (7). However, Sakano (1996) states that only (9a) is grammatical. Thus, Sakano's analysis can neither predict correct outputs, as shown in (8), nor select only grammatical outputs, as shown in (9).

Kogure and Miyashita (1998) also argue for the existence of colons and feet, but within an OT framework. In order to account for the location of silent moras in tankas they propose the two constraints on alignment shown in (10).

(10) a. ALIGN(COLON,L, WD,L) (ALIGN(C,W)): Align the left edge of a colon with the left edge of a word.
b. ALIGN(WD, FT) (ALIGN(W,F)): Align every word boundary with a foot boundary.

They claim that ALIGN(C,W) dominates ALIGN(W,F). A sample tableau is given in (11) (repeated from (28) in Kogure and Miyashita (1998)[6]; colon boundaries are indicated by brackets.)

(11)	/●●●+○○○○/	ALIGN(C,W)	ALIGN(W,F)
a. ☞	[|×●|●●|][|○○|○○|]	*	*
b.	[|●●|●○|][|○○|○×|]	*	**[*

In 3-4 structures (11a) wins over (11b), because (11a) has fewer violations of ALIGN(W,F). However, notice that Kogure and Miyashita do not include the candidate that inserts a line-internal pause, i.e. [|●●|●×|][|○○|○○|], even

though in OT all candidates must be evaluated. Unfortunately for Kogure and Miyashita this candidate should win under their analysis, because it does not violate the highest ranked constraint ALIGN(C,W), whereas the other two relevant candidates do.

In sum Kogure and Miyashita's analysis does not generate the correct outputs, Sakano's (1996) analysis requires incoherent stipulations, and Bekku's (1977) analysis is based on incorrect pause locations. We are thus left with two major problems: none of the phonetic analyses of haikus and tankas provide a coherent description of the location of the relevant pauses, and none of the available phonological analyses manage to explain why these pauses occur where they do.

3 Data and Results

In order to account phonologically for the problems discussed thus far solid phonetic data on both the length and the location of pauses are indispensable. My data corpus shows that each line is eight moras long, that a pause is inserted after a monomoraic PrWd, that 3-4 structures insert a pause line-initially, and that all other structures insert the pause at the end of the line.

3.1 The data

It is essential to collect a sufficient body of data in order to understand native-speaker intuitions concerning the length and the location of pauses. To this end I recorded 25 native speakers of Japanese reciting 16 haikus and 9 tankas. The poems were chosen in order to test various syntactic structures, as shown in (12).

(12) Structures of recited lines

5 overt moras:	1-4, 2-3, 3-2, 4-1, 5
7 overt moras:	1-6, 2-5, 3-4, 4-3, 5-2, 6-1

The length of overt moras and pauses was measured using SoundEdit™. The location of pauses was also observed. In what follows I do not provide statistics for the last line, because the length of the final pause in this line is not measurable.

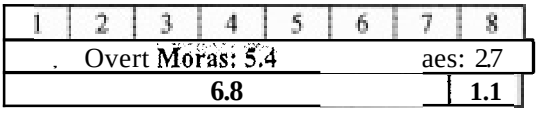
3.2 The length of pauses, overt moras, and lines

(13) shows for haikus the mean length in milliseconds, the standard deviation of overt moras and pauses, and the total length of each line. What is striking is that the total length of lines 1 and 2 is not significantly different, though the former contains fewer overt moras than the latter.

(13)	Overt moras	Standard deviation	Pauses	Standard deviation	Total length	Standard deviation
Line 1	929	163	464	230	**1393**	258
Line2	1172	173	193	164	**1365**	251

Diagram (14) shows that this length is eight moras. The length of the overt and silent components of each line is converted into a number of moras.'

(14)

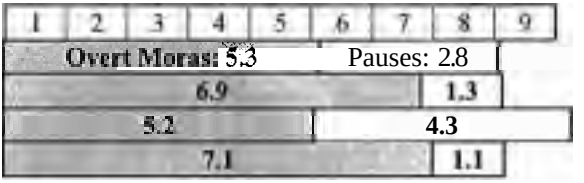


The statistical results for **tankas** are shown in (15). Again the closeness in values of line 1, 2 and 4 is striking given that the number of overt moras in line 1 is smaller than in line 2 or 4.

(15)	Overt moras	Standard deviation	Pause	Standard deviation	Total length	Standard deviation
Line 1	827	100	440	195	**1267**	262
Line 2	1080	159	199	173	**1279**	219
Line 3	809	191	675	285	**1484**	316
Line 4	1106	126	177	144	**1283**	215

Diagram (16) shows the length of the audible and silent components in each line in terms of moras. Every line except line 3 is eight moras long, as I argue in 4.5.

(16)



I claim based on these results that the audible part of each line is augmented by a pause in order to maintain a line length of eight moras.

3.3 The location of pauses

Let us now **turn** to the question of where these pauses are inserted. The recorded data show that the location of the pauses is determined by the syntactic structure of the **line.**[8] The first generalization we can make is that readers insert a pause after a monomoraic **PrWd.** Recall next that 3-4 structures are also controversial with respect to the location of the pause (cf. (5)). According to the data, readers

insert a monomoraic pause at the beginning of the line. In all structures other than 1-6 and 3-4, a monomoraic pause appears at the end of the line. (17) summarizes the location of the pause for the different line types.

(17)	1	2	3	4	5	6	7	8
1-6	●	✖	○	○	○	○	○	○
2-5	●	●	○	○	○	○	○	✖
3-4	✖	●	●	●	○	○	○	○
4-3	●	●	●	●	○	○	○	✖
5-2	●	●	●	●	●	○	○	✖
6-1	●	●	●	●	●	●	○	✖

The generalizations in (17) clearly show that the location of the pause is determined by the syntactic structure in the line; if this were not the case we would expect the pause either to occur in a consistent location (e.g. line-final) regardless of the syntactic structure of the line, or to vary randomly.

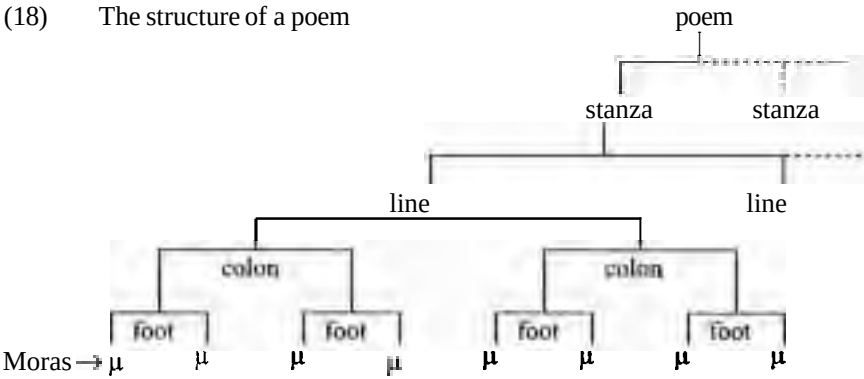
4 An OT Analysis

The next question to be answered is why a certain structure inserts the pause line-initially, while another inserts it between **PrWds** and another inserts it **line**-finally. I claim that this systematic variation is due to the interaction between hierarchically-organized prosodic structure and a set of phonological constraints.

4.1 The prosodic structure of poetry

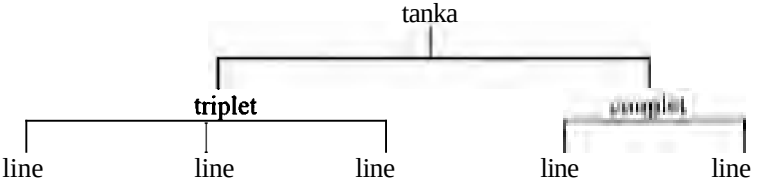
I propose the prosodic structure in (18) in order to account for the location of the pauses in **haikus** and **tankas.**

(18) The structure of a poem



If poetic rhythm consisted simply of a linear sequence of audible and silent moras, the location of the silent moras would not matter as long as the eight-mora template was respected. The fact that the location of the pauses is highly constrained demonstrates that the structure of poetry is hierarchically organized. In this prosodic hierarchy the eight moras are the basic building blocks. These moras are grouped into feet in units of two; there are therefore four feet in a line (see It6 (1990) and Poser (1990) for demonstration that a foot consists of two moras in Japanese). Two feet make a colon; thus there are two colons in a line. Lines are then grouped into stanzas. I claim that there are two kinds of stanzas: a triplet consists of three lines, and a couplet consists of two lines. For example, a tanka consists of two stanzas. As shown in (19), the first stanza is a triplet, that is the first 5-7-5 sequence, and the second one is a couplet, that is the remaining 7-7 sequence.

(19) The structure of a tanka



Haikus have one stanza, a triplet. Finally, a set of stanzas makes a poem. Let us next consider the evidence for each level in this prosodic hierarchy.

4.2 The foot

The first level to analyze is the foot. The existence of this level is suggested by the existence of the eight-mora template. As demonstrated in §3, a line containing seven overt moras is augmented by a monomoraic pause; thus there is an eight-mora template. The pair of familiar constraints in (20) accounts for this template.

(20) a. FTBIN[μ] (FTBIN): Feet must be binary under moraic analysis (Prince and Smolensky 1993).

b. DEP: Every segment of the output must have a correspondent in the input (McCarthy and Prince 1995).

(20a) requires that every foot consist of two moras. In other words, this constraint ensures that there is an even number of moras in a line. Note that pauses can satisfy this constraint in the same manner as overt moras.[9] For example, one overt mora plus a monomoraic pause in a foot satisfies FTBIN, whereas one overt mora in a foot does not. Constraint (20b), on the other hand,

prevents moras from being inserted. In other words, this constraint keeps the number of pauses to a minimum, as illustrated in (21). (Because the syntactic structure is not relevant here, all overt moras are indicated by ○.)

(21)	/○○○○○○○○/	FTBIN	DEP
a. ☞	|○○|○○|○○|○✖|		*
b.	|○○|○○|○○|○|	*!	
c.	|○○|○○|○○○|	*!	
d.	|○○|○○|○○|○✖✖|		**!*

(21b), which has no DEP violation, is ruled out, because it violates higher-ranked FTBIN by having only one mora in the final foot. In the same manner, (21c) is ruled out by virtue of containing three moras in the final foot. Thus, in order not to violate FTBIN the number of moras in a line must be even. However, candidates which insert unnecessary pauses are also ruled out, even if they do not violate FTBIN. (21d), which has a trimoraic pause, loses to (21a) because (21d) violates DEP three times, whereas (21a) violates it once. In this way the notion of bimoraic feet in tandem with the DEP constraint accounts for the eight-mora template, which is essential to the rhythm of poetry.

Another piece of evidence for bimoraic feet can be indirectly observed in the behavior of monomoraic PrWds. Recall that a monomoraic pause is inserted after a monomoraic PrWd. This fact suggests that the monomoraic PrWd is not prosodically optimal by itself, and must be augmented by the monomoraic pause in order to satisfy the minimal size of a PrWd, which is a bimoraic foot (22).

(22) MINIMALWORD[FT] (MINWD): Every PrWd must contain at least two moras.[10]

(22) prevents a monomoraic PrWd from being immediately followed by the next PrWd. Note that an inserted pause can satisfy (22) in the same manner that it meets FTBIN. Tableau (23) shows the crucial ranking of the three constraints: FTBIN/MINWD » DEP.

(23)	/●○○○○○○/	FTBIN	MINWD	DEP
a. ☞	|●✖|○○|○○|○○|			*
b.	|●○|○○|○○|○✖|		*!	*
c.	|✖●|○○|○○|○○|		*!	*
d.	|●|○○|○○|○○|	*!	*	

The input is a 1-6 structure. (23b-c) are ruled out by the MINWD constraint, because the monomoraic PrWd is immediately followed by the second PrWd.

Compare (23a) with (23d): (23d) loses to (23a) because (23d) violates **FTBIN** (and **MINWD**), even though it has no violation of **DEP**. Thus, **FTBIN/MINWD** must be ranked higher than **DEP**.

Recall, however, that the location of the pause in the structures other than 1-6 is either line-initial or line-final, and this cannot always be accounted for by these constraints and their ranking, as exemplified in (24).

(24)	/●●●|○○○○/	FTBIN	MINWD	DEP
a. ☞	|✖●|●●|○○|○○|			*
b.	|●|●●|○○|○○|	*!		
c.	|●●●|○○|○○|	*!		
d. ☞	|●●|●○|○○|○✖|			*
e. ☞	|●●|●✖|○○|○○|			*

The input in (24) is a 3-4 structure. **FTBIN** rules out (24b-c).[11] Compare (24a) with (24d-e), however. The constraint ranking in (24) incorrectly predict that (24d-e) should tie with (24a), because none of them violate **FTBIN** or **MINWD**, and all violate **DEP** once. In order to solve this problem I argue that colons are essential in the prosodic structure of poetry; in the next section I show how the postulation of this level in the prosodic hierarchy accounts for the recalcitrant facts.

4.3 The colon

As I just demonstrated, the ranking in (24) overgenerates in the sense that it predicts the forms in (24d-e) to be grammatical, when in reality the only grammatical output is (24a). In order to solve this problem I propose three constraints, one on alignment, one on binarity, and one on contiguity. The constraint on alignment requires that the edges of a PrWd align with the edges of a colon. Recall that a colon consists of two feet. Thus, the prosodic structure of (24a) and (24d-e) can be illustrated as in (25a-c), respectively. (Square brackets indicate colon boundaries.)

(25) a. √[|✖●|●●|][|○○|○○|]
b. *[|●●|●○|][|○○|○✖|]
c. *[|●●|●✖|][|○○|○○|]

First compare (25a) with (25b). The difference between them is that (25a) has three alignments of PrWd and colon edges, i.e. in all but line-initial position, whereas in (25b) there is only one alignment, in line-initial position. In order to account for this observation I propose the set of constraints in (26).

(26) a. **ALIGN(PRWD, COLON) (ALIGN(P,C))**: Every edge of a PrWd must align with an edge of a colon.

b. **COLONBINARITY[FT] (CLNBIN)**: Colons must be binary under prosodic analysis.

(26a) requires that both the left and right edges of a PrWd align with a colon edge: (25b) has three violations of ALIGN(P,C), while (25a) has one. (26b) requires that every colon consist of two feet.[12] Thus, it rules out a colon which does not contain two feet, such as *[|●●|] and *[|●●|●●|●●|].

Let us next compare (25a) with (25c). The difference between these two is whether there is a line-internal pause or not. The ungrammaticality of (25c) suggests that line-internal pauses are disfavored. We can account for this behavior in terms of the independently-motivated CONTIGUITY constraint in (27).

(27) **CONTIGUITY (CONTIG)**: The portion of input standing in correspondence forms a contiguous string in output (McCarthy and Prince 1993a).

The ranking of the relevant constraints thus far discussed is shown in (28) (repeated from (24)). CONTIG is temporarily ranked together with DEP and ALIGN(P,C).

(28)	/●●●+○○○○/	CLNBIN	FTBIN	CONTIG	DEP	ALIGN (P,C)
a. ☞	[|✱●|●●|||○○|○○|]				*	*
b.	[|●|●●|||○○|○○|]		*!			
c.	[|●●●|||○○|○○|]	*!	*			
d.	[|●●|●○|||○○|○✱|]				*	**!*
e.	[|●●|●✱|||○○|○○|]			*!	*	*

(28b) is ruled out by FTBIN, and (28c) by CLNBIN. CONTIG rules out (28e) due to the insertion of the line-internal pause.[13] Finally ALIGN(P,C) rules out (28d) due to the three alignment violations, and (28a) wins. The same constraint system accounts for 4-3 structures, in which a line-final pause occurs, as shown in (29). (29b-c) are ruled out by virtue of violating the constraint(s) on binarity. (29d) loses due to its three violations of ALIGN(P,C). (29a) wins over (29e), because (29e) violates CONTIG due to the line-internal pause.

(29)	/●●●●+○○○/	CLNBIN	FTBIN	CONTIG	DEP	ALIGN (P,C)
a. ☞	[|●●|●●|][|○○|○✖|]				*	*
b.	[|●●|●●|][|○○|○|]		*!			
c.	[|●●●●|][|○○○|]	*!	*			
d.	[|✖●|●●|][|●○|○○|]				*	**!*
e.	[|●●|●●|][|✖○|○○|]			*!	*	*

Recall now that both 2-5 and 5-2 structures have a line-final pause. These structures show that **CONTIG** must be ranked higher than **ALIGN(P,C)**, as shown in (30-31).

(30)	/●●+○○○○○/	CLNBIN	FTBIN	CONTIG	DEP	ALIGN (P,C)
a. ☞	[|●●|○○|][|○○|○✖|]				*	***
b.	[|●●|✖○|][|○○|○○|]			*!	*	**

(31)	/●●●●●+○○/	CLNBIN	FTBIN	CONTIG	DEP	ALIGN (P,C)
a. ☞	[|●●|●●|][|●○|○✖|]				*	***
b.	[|●●|●●|][|●✖|○○|]			*!	*	**

(30a), which violates **ALIGN(P,C)** three times, wins over **(30b),** which violates the higher-ranked **CONTIG** constraint, although it has fewer violations of **ALIGN(P,C)**. In the same manner, **(31a)** wins over (31b).

Finally let us return to the 1-6 structure, for which the **MINWD** constraint is relevant. (32) shows that **MINWD** must be ranked higher than **CONTIG**.

(32)	/●+○○○○○○/	CLN BIN	FT BIN	MIN WD	CONTIG	DEP	ALIGN (P,C)
a. ☞	[|●✖|○○|][|○○|○○|]				*	*	**
b.	[|●○○|][|○○|○○|]	*!	*	*			
c.	[|●|○○|][|○○|○○|]		*!	*			**
d.	[|✖●|○○|][|○○|○○|]			*!		*	***
e.	[|●○|○○|][|○○|○✖|]			*!		*	***

In **(32b)** the first colon violates **CLNBIN** by having only one foot, and in **(32c)** the initial foot violates **FTBIN** by having only one mora. (32d-e) are ruled out because the monomoraic PrWd is immediately followed by the second PrWd violating **MINWD**. **(32a),** in which a pause appears after the monomoraic PrWd, wins because **CONTIG** is ranked lower than **MINWD**.

4.4 The line

Let us next return to the 5-2 and 2-5 structures, which provide evidence for the line level. Recall that 5-2 and 2-5 structures insert a pause line-finally. However, notice that 5-2 and 2-5 structures with a line-initial pause are also predicted to be grammatical by the constraint system introduced thus far. For example, if a line-initial pause occurs in a 5-2 structure, i.e. *[|✖●|●●|][|●●|○○|], the current analysis predicts that it should tie with the grammatical structure [|●●|●●|][|●○|○✖|]: neither violate the constraints on binarity and contiguity, and both equally violate DEP and ALIGN(P,C). In order to generate the correct outcomes I propose another alignment constraint, which requires that the left edge of a line align with the left edge of a PrWd, as shown in (33).

(33) ALIGN(LINE,L, PRWD,L) (ALIGN(L,P)): The left edge of every line must align with the left edge of a PrWd.

This constraint must be ranked lower than ALIGN(P,C), because otherwise the initial pause in 3-4 structures could not be accounted for: if ALIGN(L,P) was ranked higher than ALIGN(P,C), *[|●●|●○|][|○○|○✖|] would win over √[|✖●|●●|][|○○|○○|], because the former satisfies the alignment of the left edges of the line and a PrWd, while the latter does not. The final constraint system is shown in (34).

(34)	/●●+○○○○○/	CLN BIN	FT BIN	MIN WD	CON TIG	DEP	ALIGN (P,C)	ALIGN (L,P)
a. ☞	[|●●|○○|][|○○|○✖|]					*	***	
b.	[|✖●|●○|][|○○|○○|]					*	***	*!

(34a) wins over (34b), because (34a) satisfies ALIGN(L,P). The fact that a phonological constraint refers to the line provides evidence for this level.

Another piece of evidence for the line can be seen in the interaction between the sentence boundary and the line boundary. A well-known haiku written by Kobayashi Issa in (35) illustrates this point.

(35)	1	2	3	4	5	6	7	8	
line 1	ya	se	ga	e	ru	✖	✖	✖	'A skinny frog'
line 2	ma	ke	ru	na	*i*	*Q*	*sa*	✖	'Don't lose, For *Issa*'
line 3	ko	ko	ni	*a*	*ri*	✖	✖	✖	'is here'

Line 2 consists of two PrWds, makeruna and Issa, the latter of which belongs syntactically to the last sentence, i.e. *iQsa* kokoni ari 'For Issa is here'.

However, a pause is inserted at the end of line 2, separating the two PrWds *iQsa* and kokoni 'here', which belong to the same sentence. This case shows that the ban on pausal insertion, CONTIG, applies within a line irrespective of sentence boundaries. Without the prosodic constituent Line, we would be unable to account for this fact in an insightful manner.

4.5 The stanza

Our final task is to provide evidence for the prosodic constituent stanza. This evidence comes from the fact that the third line of tankas is more than nine moras long (see 3.1). The longer silence between the third and the fourth lines shows that there is a boundary between two stanzas. Interestingly the length of this extra pause varies not only among the readers, but also among different tankas recited by a single individual. Thus, I claim that this longer silence is not a product of phonological constraints. Native speakers of Japanese feel that there is a major semantic break between the first three lines and the remaining two lines.[14] This break may add an arbitrary number of silent moras to the line.

5 Conclusion

In this paper I have accounted for the nature of silent moras in traditional Japanese poetry. Pauses are inserted in a highly constrained manner. The fact that a line consists of eight moras can be accounted for by constraints enforcing binarity: a line consists of two colons, a colon consists of two feet, and a foot consists of two moras. The MINWD constraint accounts for the pause that appears only after a monomoraic PrWd, and provides evidence that the minimal word in Japanese is a bimoraic foot. The fact that speakers of Japanese do not insert a line-internal pause except after a monomoraic PrWd can be accounted for by CONTIG. ALIGN(P,C) implies that word boundaries optimally coincide with phonological boundaries, i.e. colons, and DEP prevents audible moras from being augmented by unnecessary pauses. Finally ALIGN(L,P) suggests that it is preferable for a line to begin with an overt mora, all else being equal.

Notes

[*] I am deeply indebted to Bert Vaux and Michael Kenstowicz for their insightful comments, constant support, and discussion of the issues raised in this paper. I also thank the audience of WECOL 2000 for their questions and comments. All errors are my own.

[1] Moraic elements in Japanese are vowels, the mora-nasal (N), and the mora-obstruent (Q).

[2] I collected data and analyzed lines with five overt moras and lines with seven overt moras; however, I limit my discussion to lines with seven overt moras in this paper. See Asano (2001) for a fuller OT analysis of the prosodic structure of Japanese poetry.

[3] In this paper PrWd refers to a minimal phrasal unit such as a noun with a panicle, e.g. *mizu-no* 'of water', a verb with its ending, e.g. *make-ru-na* 'don't lose', and so on.

[4] See 2.4 for their phonological analyses of the location of pauses in more detail.

[5] My experiment shows that (6b-c) arc incorrect; see 3.3.

[6] Their tableau for 1-6 structures has an error (repeated from (32) in Kogure and Miyashita (1998)).

	/●+OOOOOO/	ALIGN(C,W)	ALIGN(W,F)
a. ☞	[|✖.●|OO|||OO|OO|]	*	*
b.	[|●.O|OO|||OO|O✖|]	*!*	***

Under ALIGN(C,W) (a) has two violations, i.e. neither of the left edges of the colons align with the left edges of the PrWds, while (b) has only one violation, i.e. the left edge of the initial colon aligns with the left edge of the monomoraic word. Thus, their analysis predicts (b) to be the winning candidate.

[7] In order to convert the length in milliseconds to moras I calculated the length of a single mora by dividing the length of the first 4 overt moras in all poems by 4.

[8] 1 calculated the pausal data in terms of the percentage of readers, not in terms of the average length of each pause. The rhythm of reciting poems varies to a certain extent on an individual basis. This statement by no means implies that the location and length of the pauses are arbitrary. The data show instead that in some cases readers have a choice of ways to recite a poem. For example, more than 70% of the readers inserted a pause after a monomoraic PrWd, while the rest did not. Calculating the average length of a line-internal pause, therefore, does not reveal much about the behavior of such pauses, but knowing the tendency of readers does. It is also worth noting that each individual is consistent in the way helshe recites poems. That is, if one inserts a pause after a monomoraic PrWd in a poem, he/she does the same in other poems with a monomoraic PrWd. In this paper I focus on the location of pauses for which 70% or more readers agree.

[9] The notion that silence can fill positions of timing units is supported by Hayes and MacEachern (1998) among others: silent beats in English verse are assigned grids in metrical structures, even if they are not aligned with syllables.

[10] I do not employ traditional OT constraints on alignment to account for the behavior of monomoraic PrWds. Requiring any types of alignment of the edges of a PrWd and a foot incorrectly predicts, for instance, that a line-internal pause should occur in 5-2 structures, i.e. *|●●|●●|●✖|OO|, in order to maintain the alignment of the edges of the second PrWd and the final foot. Notice that a line-internal pause occurs only after a monomoraic PrWd to satisfy the minimal word requirement. Although MINWD involves the bimoraic foot as the minimal size of a PrWd, it does not indicate any sort of alignment constraints.

[11] I argue in 4.3 that (24c) has a fatal violation of CLNBIN, which requires that a colon be bipodic.

[12] CLNBIN in tandem with FTBIN ensures that a line with five overt moras will also consist of eight moras. For example, ungrammatical six-mom outputs such as *[|●●|●●|][|●✖|], which satisfies FTBIN and violates ALIGN(P,C) to exactly the same extent as √[|●●|●●|][|●✖|✖|], but has fewer violations of DEP, is ruled out by CLNBIN, because the ungrammatical output does not have two feet in the second colon.

[13] See (5a) for Kumashiro's (1968) claim for the rhythm of 3-4 structures, in which CONTIG, ALIGN(P,C), and DEP are all satisfied; however, it is ruled out due to a violation of a high-ranked constraint, IDENT[μ], which requires that the length of every output segment be identical with the corresponding input segment. Kumashiro's structure also violates CLNBIN and/or FTBIN.

[14] Traditionally tankas are considered to consist of two semantic entities. The first three lines are called *kami no ku* 'upper lines' and the last two lines are called *shimo no ku* 'lower lines' (Ichiko 1986).

References

Abercrombie, David. 1965. *Studies in phonetics and linguistics*. London: Oxford University Press.

Asano, Makiko. 2001. "Pauses in Poetic Meters and the Prosodic Structure of Japanese Poetry". ms. Harvard University.

Bekku, Sadanori. 1977. *Nihongo no rizumu [The rhythm of Japanese]*. Tokyo: Kodansha.

Cole, Deborah and Mizuki Miyashita. 1999. "Poetic meter in a prominence insensitive language". Conference handout, University of Toronto.

Hayes, Bruce and Margaret MacEachern. 1998. "Quatrain form in English folk verse". *Language, 74:* 473-507.

Ichiko, Teiji. 1986. *Shin kogo jiten [A New dictionary of classical Japanese]*. Tokyo: Gakushu Kenkyusha.

Itô, Junko. 1990. "Prosodic minimality in Japanese". *CLS,* 26.2: 213-239.

Kogure, Kumi and Mizuki Miyashita. 1998. "Audible silence: silent moras in Japanese verse". WECOL, 10: 258-272.

Kumashiro, Shinsuke. 1968. *Nihon shiika no kozo to rizumu [The structure and the rhythm of Japanese poetry].* Tokyo: Kadokawa.

Lehiste, Ilse. 1997. "The phonetic realization of the haiku form in Estonian poetry, compared to Japanese". *Speech production and language in honor of Osamu Fujimura:* 241-249. ed. Kiritani, Shigeru, Hajime Hirose and Hiroya Fujisaki. Berlin: Mouton de Gruyter.

Matsuura, Tomohisa. 1991. *Rizumu no bigaku [Aesthetics of Rhythm]*. Tokyo: Meiji-shoin.

McCarthy, John and Alan Prince. 1993a. *Prosodic morphology I: Constraint interaction and satisfaction.* ms. University of Massachusetts, Amherst, and Rutgers University.

. 1993b. "Generalized Alignment". *Yearbook of Morphology* 1993: 79-153. ed. G. E. Booij and J. van Marle. Dordrecht: Kluwer.

. 1995. "Faithfulness and reduplicative identity". *Papers in Optimality Theory: University of Massachusetts Occasional Papers 18:* 249-384.

Okai, Takashi and Tota Kaneko. 1963. *Tanshikei bungakuron [An analysis of the structure of shortpoems]*. Tokyo: Kinokuniya.

Poser, William. 1990. "Evidence for foot structure in Japanese". *Language,* 66: 78-105.

Prince, Alan and Paul Smolensky. 1993. *Optimality Theory: Constraint Interaction in Generative Grammar.* ms. Rutgers University and University of Colorado.

Sakano, Nobuhiko. 1996. *Shichigo-cho no nazo o toku [Solving the problem of the 7-5 rhythm]*. Tokyo: Taishukan.

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A Multiple Spell-out Account of *Wanna*-contraction*

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1 Background

Wanna contraction (hereafter, ***WC)*** has captured the attention of several linguists in the last thirty years. The facts are the following: In English, ***want*** and ***to*** can be contracted into ***wanna.*** Unexpectedly, contraction of ***want*** and ***to*** is not possible in certain cases as illustrated in (1). The goal of this paper is to show that under a recent proposal within the minimalist program it is possible to revive the analysis of WC proposed in Bresnan (1971a). More precisely, I claim that the Multiple Spell-out proposal provides a perfect framework for (a version of) Bresnan's approach.

(1) a. Who do you wanna visit? (←Who do you want to visit?)
b. *Who do you wanna visit you? (←Who do you want to visit you?)
From Bresnan (1971a), attributed to L. Horn

It has been standardly assumed within Generative Grammar (from the beginning to the early stages of the Minimalist Program) that syntax communicates to other components (phonology, semantics) only at one point in the derivation. The precise point where this happens is different in different models. Thus in the ***Aspects*** model, the semantic component was linked to ***Deep Structure*** and the phonological component was linked to ***Surface Structure*** as in ***(2).*** Since the seventies, it has been standard to assume some version of the T-model as in (3). In both, syntax communicates to the other components only once.

Recently several scholars working within the Minimalist Program have challenged the assumption that the relation between Syntax and other components of the grammar takes place only at one point in the derivation. In particular, authors like Chomsky (1999, 2000), Uriagereka (1999), Epstein et al. (1998) among others, have proposed that the operation of Spell-out can take place several times during the derivation of a given sentence. This has come to be known as Multiple Spell-out (MSO) Hypothesis, and appears illustrated in (4).

(2) Lexicon

Deep Structure → Semantic Interpretation

Surface Structure

Phonological component

(3) DS

SS

(or Spell-out)

PF LF

(4) Numeration

PF LF

PF LF

The MSO proposal is not entirely new. In the early seventies there were attempts to make the relation between Syntax and other components more dynamic. For instance, Jackendoff (1972) proposed that "various parts of semantic representation [were] related by the semantic component to various levels of syntactic representation" (p.4). Similarly Lasnik (1972) argued for the possibility of applying the semantic rule that assigns scope to negation after the end of each syntactic cycle. In both proposals, it is required that the semantic component access the syntactic representation at different points in the derivation. This is problematic under a T-model and seems to require some version of MSO.

Earlier, Bresnan (1971b) made similar proposals on the phonological side. In particular, Bresnan (1971b) proposed that certain stress patterns follow from the assumption that the "Nuclear Stress Rule is ordered after all the syntactic transformations on each transformational cycle" @. 259). This proposal also requires that the phonological component be accessed several times during the derivation.

More interestingly for the purposes of this paper, Bresnan (1971a) proposed that the best way of characterizing WC was to assume that the rules that generate *wanna* from *want to* also apply at the end of each cycle. She offers the derivations in (5) and (6) for (1)a and (1)b, respectively.

(5) [S' Q [S you want [S for you to visit who]]]

you want **O** to visit who .	Identical Subject Deletion
YOU **wanna** visit who .	To contraction
who you wanna visit **O** .	Question formation
do .	Other rules
who do you wanna visit	

(6) [S' Q [S you want [S for who to visit you]]]

who you want to visit you .	Question formation
do .	Other rules
who do you want to visit	

The rule of ***to*** contraction that Bresnan proposed appears in (7). This rule applies in (5) at the end of the second cycle. Bresnan claims that the rule in (7) cannot apply in (6), because by the time the structural description of the rule is met, it is too late. In other words, application of the ***to*** contraction rule in (6) at S-bar cycle (the only point where the structural description of the rule is met) would violate the principle of the cycle which Bresnan states as in (8).

(7) $[_S$ NP V to V ...] → [NP [V+to] V ...] (Bresnan (1971a:), p. 1)
(8) There is probably a general condition on the transformational cycle forbidding a cyclic transformation from applying on S_i to effect a structural change entirely within S_j if S_i dominates S_j. (Bresnan (1971a), fn. 5)

The important feature of Bresnan's analysis is that WC, a morphophonological process, takes place after the end of each syntactic cycle. This is only possible if at the end of each cycle the syntactic object is delivered to the phonological component.

Bresnan's account was overshadowed by a series of analyses of WC that were based on the assumption that that the illegitimate instances of WC are due to the presence of some intermediate element that blocks the application of WC. The precise characterization of the elements that block WC has been the subject of much discussion. Some scholars proposed that WC is blocked by a Case assigning head (Snyder and Rothstein (1992), Bošković (1997)). Others scholars have proposed that certain types of XP block WC (Lightfoot (1976), Chomsky and Lasnik (1977, 1978), Jaeggli (1980), Aoun and Lightfoot (1984)). Finally, some researchers claim that WC is blocked by any type of XP. (Fukui and Speas (1986), Boeckx (2000)). I will briefly review some of these proposals.

Bošković (1997) argues that infinitival complements of ***want*** with lexical subjects (as in ***I want John to leave)*** are headed by a null case checking C and proposes that this C blocks contraction, as appears illustrated in (9). As for the cases in which the subject is PRO, Bošković argues that the infinitival complement is a bare IP without a C. Thus, in cases like (10) WC is not blocked because no C is present.

(9) Who do you want $[_{CP}$ C t_{who} to visit you] → ***wanna**
(10) Who do you want $[_{IP}$ PRO to visit t_{who}] → √wanna

In the approaches where the intervening element is an XP, the question arises what type of XP blocks contraction. In (11), there is a list of possible elements that can appear in the subject position of the embedded infinitival. It is also specified whether they block WC or not.

(11)

	Type of XP	Blocks Contraction?
a.	Lexical NP	→ Yes (*I wanna Mary leave)
b.	wh-trace	→ Yes (*Who do you wanna leave the room?)

c. NP-trace → No (John is sposta t leave on Monday (Bošković (1997):35)

d. PRO → No (I wanna leave the room)

A quite successful approach within the GB framework was to assume that only Case-marked elements block contraction. This was Jaeggli (1980)'s solution.

Finally, some researchers have proposed that any type of element blocks contraction. As for why PRO does not block contraction, there have been at least two proposals. Fukui and Speas (1986:150-1) proposed that PRO does not block WC because it remains in Spec,VP, as in (12).

(12) They want [$_{I'}$ to [$_{VP}$ PRO leave]] → They wanna PRO leave

More recently, Boeckx (2000), adopting Hornstein's (1999) theory of obligatory control and Lasnik's (1999) proposal that A-movement leaves no trace, provides an elegant account of WC. Boeckx notes that the fact that neither PRO nor NP-traces block contraction is expected if we assume Hornstein's and Lasnik's proposals. Under Hornstein's analysis, obligatory control structures are reduced to raising constructions. Thus, the two sentences in (13) and (14) are derived in the same way. In both cases, at an earlier stage in the derivation, ***John*** appears in the embedded infinitival as in (13)b and (14)b. After raising, we obtain (13)c and (14)c, and under Lasnik's proposal that A-movement does not leave a trace, we obtain (13)d and (14)d:

(13)a. John expects to win
b. expects [$_{IP}$ John to win]
c. John expects [$_{IP}$ t_{John} to win]
d. John expects [$_{IP}$ O to win]

(14) a. John seems to be happy
b. seems [$_{IP}$ John to be happy]
c. John seems [$_{IP}$ t_{John} to be happy]
d. John seems [$_{IP}$ O to be happy]

The derivations for (1)a and (1)b would be as in (15) and (16). Contraction is not blocked in (15), because nothing intervenes between ***want*** and ***to*** at the end of the derivation. The presence of ***who*** blocks contraction in (16).[1]

(15) a. you to visit who
b. want you to visit who
c. you want __ to visit who
d. who you want __ to visit who

(16) a. who to visit you
b. want who to visit you
c. you want who to visit you
d. who you want who to visit you

All the proposals based on the presence of an intervening element are subject to the same criticism: It is not clear why WC, a morpho-phonological process should be sensitive to the presence of elements that are null from a phonological point of view. For instance, it is not clear why in (16)d the copy/trace of ***who*** should block WC. Since it is phonologically irrelevant (it will not be pro-

nounced in that position) it shouldn't block a morpho-phonological process. Alternatively, one could ask why WC cannot take place after copies/traces are eliminated from the representation.

A similar point can be made using examples like (17) and (18). In these examples, the intervening element is the copy of a null operator in (17), and two constituent boundaries in (18). In both cases we are dealing with phonologically null elements. The approaches based on the presence of an intervening element would have to claim that in these cases phonologically null elements block WC. This is not inconceivable.[2] Nevertheless, I will pursue an approach that does not rely on the presence of intervening elements, thus making the phonological content of the intervening element irrelevant, along the lines of Bresnan's original approach.[3]

(17) a. *The student that I wanna take the test is John
b. The student Op_i that I want t_i to take the test is John

(18) a. *I don't wanna flagellate oneself in public to become standard practice in this monastery
b. I don't want [[to flagellate oneself in public] to become standard practice in this monastery] Postal and Pullum (1982):124

2 A Multiple Spell-out approach

In this section I will present my proposal. In 2.1 I introduce the different ingredients of my proposal. In 2.2 I show how it works, and in 2.3 I show how the examples discussed by Postal and Pullum can be accounted for.

2.1 The ingredients

2.1.1 Multiple Spell-out

There have been several formulations of the Multiple Spell-out proposal. According to Uriagereka (1999), Kayne's Linear Correspondence Axiom can be considerably simplified if we assume that adjuncts and specifiers are spelled out at an early point of the derivation. That is, different parts of the tree might be sent to the phonological component at different points in the derivation.

In Ausín (2000), I made a proposal regarding Spell-out based on the Chomsky (2000) idea behind multiple applications of Spell-out. Chomsky conceives MSO as a way of allowing uninterpretable features to reach PF even though they are deleted after checking. "Deleted features are literally erased, but only after they are sent to the phonological component along with the rest of the structure of Σ -- possibly at the phase level" (Chomsky (2000), p. 131). If so, it makes sense to claim that Spell-out should be linked to the checking of the only uninterpretable features that are always erased after checking: namely Case features. (Other

types of features that undergo checking such as person, number are interpretable in some element, therefore they are not completely erased from at least one of the elements). In Ausin (2000), I argued that adopting such a formulation of **MSO** has the interesting consequence of making available a simple explanation for the locality conditions on A-movement. My goal in this paper is to show that the proposal that Spell-out is triggered by Case checking also makes available a natural explanation for the WC facts, which in fact, is a modified, updated version of Bresnan's account. Chomsky (1999, 2000), Uriagereka (1999) and Ausin (2000) for further details.

2.1.2 Infinitival complements of want

Following already mentioned proposals by Bošković (1997) and reference therein, I assume that there is a crucial difference between the infinitival complements in (19). In (19)a no Case is being checked on the subject position of the infinitival complement. In (19)b the infinitival complement is headed by a Case checking head, probably a null counterpart of ***for,*** that checks the Case of the embedded subject In other words, the full representation of the examples in (19) would be as in (20). An important consequence of this analysis is that the infinitival complement is going to be spelled out early in (20)b (since there is a Case checking head) but not in (20)a, since no Case checking is taking place.[4]

(19) a. They want to leave
b. They want Mary to leave

(20) a. They want [t_{They} to leave]
b. They want [~~for~~ Mary to leave]

2.1.3 On the nature of to

Since WC is an optional process, I propose that there are two types of ***to:*** one that triggers WC and one that doesn't. I propose that the ***to*** that undergoes contraction is specified in the lexicon as an affix ("to_{+Aff}"). The ***to*** that does not undergo contraction is specified as an independent word ('to'). In other words, I will assume that the initial elements (or the elements in the numeration) are different for (21)a and (21)b. In (21)a ***to*** would be an independent element whereas in (21)b ***to*** would be an affix.[5]

(21) a. They want to leave ← {They, pres, want, to, leave)
b. They wanna leave ← {They, pres, want, to_{+Aff}, leave)

2.2 How the proposal works

Consider first an illegitimate instance of WC like (1)b, repeated here. The (partial) derivational history of (1)b appears in (22). For expository purposes, I am representing the null C that heads the embedded infinitival and checks Case on the embedded subject as strikethrough ~~*for*~~. Since we are trying to obtain WC, the infinitival ***to*** has to be affixal: "to_{+Aff}". Here and in later examples, I include dif-

ferent stages of the derivation in the left column. Square brackets mark Spell-out points (Case checking points and at the root). In the right column, the different outcomes of Spell-out appear.

(1)b *Who do you wanna visit you?

(22)

	[visit you]	→ visit you
	who to_{+Aff} visit you	
a.	[(~~for~~) who to_{+Aff} visit you]	→ who to_{+Aff} visit **you**
	want (~~for~~) who to_{+Aff} visit **you**	
	[you want (~~for~~) who to_{+Aff} visit **you**]	→ **you** want who to_{+Aff} visit you
	[who you want (~~for~~) who to_{+Aff} visit you]	→ who you want who to_{+Aff} visit you

The crucial point in the derivation in (22) appears in the third line. At that point the embedded complementizer is inserted and the Case of the embedded subject is checked, which triggers early application of spell-out sending the whole syntactic object, to included, to the PF component. Since we are trying to obtain WC, to has to the affixal variant. Therefore, the outcome of spelling out the embedded infinitival includes an affixal version of to but no appropriate host. The representation then is ruled out as a violation of the morphological requirements of the affix. In other words, the PF outcome in (22)a violates (a modified version) of the Stranded Affix Filter (Lasnik (1981)), that requires that "a morphologically realized affix must be a dependent of a morphologically realized category at PF."[6]

A distinctive feature of my analysis is that it does not matter what element (phonologically null or not) appears in the subject position of the embedded clause. Consider (23), a partial derivation for (17)a.

(17)a *The student that I wanna take the test is John

(23)

	[take the test]	→ take the test
	Op take the test	
a.	[(for) Op to_{+Aff} take the test]	→ to_{+Aff} take the test
	want (for) Op to_{+Aff} take the test	
	I want (for) Op to_{+Aff} take the test	
	pres I want (for) Op to_{+Aff} take the test	
	[I pres want (for) Op to_{+Aff} take the test]	→ I want to_{+Aff} take the test

As before, the crucial point is the insertion of the embedded complementizer (the null counterpart of for). Since it is a Case checking point, an early application of spell-out takes place. Again, spelling out the embedded clause is going to affect to but not want, resulting in a violation of the SAF.

It is important to note that under my account we don't have to stipulate that WC takes place before traces are eliminated from the structure. Deletion of the

traces would not rescue the SAF violation in (22)a or (23)a. In other words, even if to_{Aff} attaches to want at the end of the derivations of (22) and (23), that would not salvage the SAF violation that took place earlier in the derivation. I assume that the SAF applies at every PF representation that is generated by multiple applications of spell-out.

Consider now a good instance of WC like (1)a, repeated here. The relevant parts of its derivation appear in (24).

(1)a Who do you wanna visit?

(24)

[visit who]	→ visit who
you to_{+Aff} visit who	
want to_{+Aff} you visit who	
[you want to_{+Aff} visit who]	→ you wanna visit who
[who you want to_{+Aff} visit who]	→ who do you wanna visit who

The crucial characteristic of (1)a is that the position of the embedded subject in the infinitival clause is not a Case checking position. Thus no Spell-out is triggered at that point. The first time want and to are spelled out is when the subject you is has its nominative Case checked. At this point, WC applies.

In (24), raising to subject does not leave a trace. However, the proposal in this paper does not rely on this. If a trace/copy were present, it would be enough to say that WC is not sensitive to the presence of phonologically null elements. In this respect, the proposal in this paper follows Bresnan's, since for her, it was not crucial what type of element appears between want and to. Both Bresnan's and the present approach to WC share the idea that the best way of explaining the WC facts is in terms of earlier stages of the derivation (cycles for Bresnan, PF outcomes for me). In both proposals, illicit instances of WC like the one in (1)b are ruled out because the WC rule applies too late. For Bresnan, it applies too late to follow the principle of the cycle. Under the proposal of this paper, it applies too late to salvage a derivation that has already been ruled out as a violation of the SAF.

If the present proposal (or Bresnan's) is right, then we have an argument for the derivational approach to syntax, because the grammatical status of a sentence depends on the properties of an early stage of the derivation.

2.3 Postal and Pullum type of examples

As already mentioned, Postal and Pullum (1982) (hereafter, P&P) noted many examples that were problematic for the approaches based on the assumption that WC is blocked by intervening elements.[7] In this section I show that the type of examples that P&P discuss can be accounted for within the MSO framework that I am adopting.

Consider (25), which shows that Heavy NP shift of the subject of the infinitival does not feed WC. This is expected if, as argued in this paper, the infinitival complements of ***want*** with lexical subjects are introduced by a null counterpart of ***for*** that checks Case and triggers early application of spell-out. If so, the infinitival complement in (25) is spelled out early, and therefore, a violation of the SAF obtains if an affixal ***to*** is present. In other words, (25) is ungrammatical because at an early stage of the derivation the infinitival complement is going to be sent to PF. That stage appears in (26). Since (26) contains an affix but no appropriate host, the sentence is ruled out as a SAF violation.

(25)*I wanna present themselves in my office [all those students whose grade for Grammar 103 was lower than A+] (P&P:131)
(Compare to: I want to present themselves in my office all those students whose grade for Grammar 103 was lower than A+)

(26) [$_{CP}$ for [all those students (...)] to_{+Aff} present themselves in my office]

The examples in (27)-(31) from P&P show that WC is not possible when the to undergoing contraction appears in a non-complement position. ***To*** appears within a subject (specifier) in (27), an extraposed sentence (adjunct) in (28), a purpose clause (adjunct) (29), a parenthetical (adjunct) in (30), and a first conjunct (specifier) in (31).

(27) a. *I don't wanna flagellate oneself in public to become standard practice in this monastery
b. I don't want [to flagellate oneself in public] to become standard practice in this monastery (P&P:124)

(28) a. It seems like to want [to regret that one does not have]
b. *It seems like to wanna regret that one does not have
(c. [To regret that one does not have] seems like to want) (P&P:125)

(29) a. One must want (in order) to become an effective overconsumer
b. *One must wanna become an effective overconsumer (P&P:126)

(30) a. I want, to be precise, a yellow four door De Ville convertible
b. *I wanna, be precise, a yellow four door De Ville convertible (P&P:131)

(31) a. *I wanna dance and to sing (P&P:126)
b. I_i want [$_{IP}$ t_i to_{+Aff} dance] and [$_{IP}$ t_i to sing][8]

The unavailability of WC in (27)-(31) follows if we assume with Uriagereka (1999), that adjuncts and complex specifiers are spelled out early. Consider (27). In order to obtain WC, affixal ***to*** needs to be chosen. Since ***[to flagellate oneself in public]*** is a (complex) specifier, it will be spelled out before it is merged with the rest of the structure. At that point of spell-out, there will be a violation of the SAF because there will be no appropriate host for the affixal *to*.[9]

Finally, consider the ungrammaticality of (32)a.

(32) a. *I don't need or wanna hear about it (from P&P p.126)
b. I don't [$_{VP}$ need [$_{IP}$ t_i to hear about it]] or [$_{VP}$ want [$_{IP}$ t_i to hear about it]]

If we assume that the structural analysis of (32)a is (32)b, then the impossibility of WC would follow from the present proposal that there are two types of *to:* an affixal and a full form. The *to* in the first conjunct in (32)b would be a full *to* (since it does not trigger contraction), whereas the *to* in the second conjunct would be an affix, since it triggers contraction. If so, the explanation for the ungrammaticality of (32)a is straightforward: there is a violation of the principle of recoverability of deletion, since the *to* that is being deleted is different from the *to* in the second conjunct.[10,11]

3 Conclusion

In this paper I have provided evidence for the multiple Spell-out proposal by showing that under that proposal a very natural account of wanna-contraction is possible. The account is clearly reminiscent of Bresnan's proposal from 30 years ago. If the facts and arguments presented in this paper are correct, it would be the case that a recent proposal receives further evidence from an old analysis.

This paper also provides support to the derivational approaches to syntax that assume that intermediate stages of the derivation of a given sentence are crucial for the characterization of certain grammatical phenomena.

Notes

* This paper has benefited from conversations with a number of people. I am in particular thankful to Cedric Boeckx, Željko Bošković, Howard Lasnik and Norvin Richards (who also was kind enough to send me his manuscript where he proposes an approach to *wanna* contraction that shares many features with the one in this paper).

[1] For expository purposes, I will use the copy theory of movement.

[2] But see Bošković (1997) for arguments against traces blocking contraction.

[3] Postal and Pullum (1982) proposed an account that did not rely on the existence of traces or any intervening element, which is briefly summarized in (i):

(i) A contracted trigger V can have a contracted form with infinitival to only if:
a. to is the main verb of the initial direct object complement of the matrix clause whose main verb is V;
b. the final subject of the complement is identical to the final subject of the matrix.

Although I agree with Postal and Pullum (1982) that there are no counterexamples to the descriptive generalization in (i), what I will try to do in the next section is to derive that generalization from independently motivated assumptions, following the insights of Bresnan's original analysis.

[4] For expository purposes, I assume the raising analysis of control (Hornstein (1999)). Nevertheless, it seems to me that the proposal in this paper could also be restated under the Null Case approach to

PRO, provided that it is assumed that checking Null Case does not trigger early application of Spell-out. This seems reasonable, since Null Case never has any phonetic realization.

[5] The situation would be similar to what we find with *not* vs. *n't*, or the difference between pronominal and full clitics in Romance languages.

[6] The original formulation of the Stranded Affix Filter cannot be stated within the Minimalist program since it makes crucial reference to Surface Structure.

(i) Stranded Affix Filter: A morphologically realized affix must be a syntactic dependent of a morphologically realized category, at surface structure. (Lasnik (1981))

[7] Some of the examples from P&P are slightly degraded for some speakers. For the purposes of this paper, I assume that the judgements that P&P report are essentially correct.

[8] There is an alternative structural description of (31)a based on gapping as in (i). If (i) is a possible structure for (31)a, then the account suggested in the text would not be available, since *to* would be spelled out at the same time as *want*, and no SAF violation would occur.

(i) I [want to_{+Aff} dance] and [~~want~~ to sing]

A different way of ruling out (31)a (under either the structural analysis of (32)b or (i)) would be to say that the same type of *to* must be present in both conjuncts. Further confirmation for this proposal is left for future research.

[9] The example in (i), also from P&P, is more problematic. In (i) *to* does not appear within an specifier, so early application of spell-out would not result in an SAF violation. According to the present proposal, the first spell-out cycle that affects to appears in (ii). At that point, there seems to be an appropriate host for *to*, namely, *want*.

(i) a. I don't want anyone [who continues to want] to stop wanting
b. *I don't want anyone [who continues to wan]na stop wanting (P&P:125)

(ii) [CP for [IP anyone [who continues to want] to+Aff stop wanting]]

The ungrammaticality of (i) can easily be accounted for if we follow Richards (2000) and assume that WC is possible only when both *want* and *to* belong to the same spell-out cycle. Adapting Richards's proposal to the assumptions made in Ausín (2000) and adopted in this paper, it could be said that WC is possible only when *want* and *to* are spelled-out at the same time for the first time. Thus, WC would not be possible in (i) because *want* and *to* are not spelled-out in the same phase(s): *who continues to want* is spelled out independently of *to*. Note that if Richards' approach is on the right track it is not clear that we need to maintain the existence of two different types of *to*. The impossibility of having WC in certain cases (which I attributed to a violation of the SAF) would then be attributed to the fact that *want* and *to* are not spelled out in the same cycle (or phase).

Željko Bošković suggests an alternative way of ruling out (i) and some of the examples in (27)-(31). He suggests that in these examples WC might be blocked by the presence of an intonational-phrase boundary. Further exploration of this idea is left for further research.

[10] It is not clear to me how Richards' proposal mentioned in the previous footnote could handle the ungrammaticality of (32)a, since it seems that *want* and *to* are spelled out in the same cycle.

[11] If an Across-the-board right dislocation analysis were to be assigned to (32)a, the impossibility of WC would also be expected, since the extraposed infinitival complement would be an adjunct and therefore would be spelled out early, under Uriagereka's proposal. Again, early application of spell-out would trigger an SAF violation.

References

Aoun, Joseph, and David W. Lightfoot. 1984. "Government and contraction," *Linguistic Inquiry*, 15.3:465-473.

Ausín, Adolfo. 2000. "Spelling out Multiple Spell-Out," *Proceedings of Second Asian GLOW 1999 at Nanzan University*, 19-36.

Boeckx, Cedric. 2000. "A note on Contraction," *Linguistic Inquiry* 31.2:357-366.

Bošković, Željko. 1997. *The syntax of nonfinite complementation: An economy approach.* Cambridge, Mass.: MIT Press.
Bresnan, Joan W. 1971a. *Contraction and the transformational cycle.* Ms., MIT. (Distributed by lndiana University Linguistic Club, Bloomington, Indiana, 1978)
Bresnan, Joan W. 1971b. "Sentence stress and syntactic transformations," *Language* 47.2: 257-281.
Chomsky, Noam. 1999. Derivation by Phase. In *MIT Occasional Papers in Linguistics* 18. Department of Linguistics and Philosophy, MIT. Cambridge, Mass.
Chomsky, Noam. 2000. "Minimalist inquiries: The framework," *Step by Step: Essays on minimalism in honor of Howard Lasnik,* ed. Roger Martin, David Michaels, and Juan Uriagereka. Cambridge, Mass.: MIT.
Chomsky, Noam, and Howard Lasnik. 1977. "Filters and control" *Linguistic Inquiry* 8.3: 425-504.
Chomsky, Noam, and Howard Lasnik. 1978. "A remark on contraction" *Linguistic Inquiry* 9.2: 268-274.
Epstein, Samuel D., Erich M. Groat, Ruriko Kawashima, and Hisatsugu Kitahara. 1998. *A derivational approach to syntactic relations.* Oxford: Oxford University Press.
Fukui, Naoki, and Margaret Speas. 1986. "Specifiers and projection"' *MIT Working Papers in Linguistics* 8: 128-172. Department of Linguistics and Philosophy, MIT. Cambridge, Mass.
Hornstein, Norbert. 1999. "Movement and Control," *Linguistic Inquiry* 30.1: 69-96.
Jackendoff, Ray. 1972. *Semantic interpretation in generative grammar.* Cambridge, Mass.: MIT Press.
Jaeggli, Osvaldo. 1980. "Remarks on *to* contraction," *Linguistic Inquiry* 11.1: 239-245.
Lasnik, Howard. 1972. *Analyses of negation in English.* Doctoral dissertation, MIT, Cambridge, Mass.
Lasnik, Howard. 1981. "Restricting the theory of transformations: A case study," *Explanations in linguistics,* ed. Norbert Hornstein and David Lightfoot, 152-173. London: Longmans.
Lasnik, Howard. 1999. "Chains of arguments," *Working minimalism,* ed. Samuel *D.* Epstein and Norbert Hornstein, 189-215. Cambridge, Mass.: MIT Press.
Lightfoot, David. 1976. "Trace theory and twice-moved NPs," *Linguistic Inquiry* 7.4: 559-582.
Postal, Paul M., and Geoffrey K. Pullum. 1982. "The contraction debate," *Linguistic Inquiry* 13.1: 122-138.
Richards, Norvin. 2000. *Wanna-contraction* and *Multiple Spell-out.* Ms., MIT.
Snyder, William, and Susan Rothstein. 1992. "A note on contraction, case, and complementizers," *The Linguistic Review* 9.3: 251-266.
Uriagereka, Juan. 1999. "Multiple Spell-Out," *Working minimalism,* ed. Norbert Hornstein and Samuel D. Epstein, 251-282. Cambridge, Mass.: MIT Press.

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T-to-C: Extractable Subjects and EPP in Turkish

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1. Turkish Facts: Extractable Subjects [1]

Majority of embedded subjects in Turkish are extractable contrary to expectations. Note that Turkish subordinate clauses are regularly (argued to be) non-finite yet a few verbs select finite clauses as complements and the very same verbs select ECM constructions. In the terms I use to distinguish various types of subordinate clauses, 'Finiteness' refers to the availability of any morpheme of the tense paradigm on the predicate of the clause. Data below illustrates interesting observations concerning the subject/object asymmetry. (1&2) illustrates L(ong) D(istance) S(crambling) in constructions with non-finite embedded clauses, which are CPs, yet they do not allow a full tense paradigm and their subjects appear with overt genitive case morphology [2]:

(1) Ercan-in$_i$ Hasan [t_i kek-I acele ye-dig -i] ni
subject
-gen cake-acc in a hurry eat-DIK-agr-acc [3]
soyle-di.
tell-past
'Hasan told that Ercan ate the cake in a hurry'
S S_i [t_i O V] V

(2) Kek-I$_i$ Hasan [Ercan-in t_i acele ye-dig -i] ni
object
cake-acc -gen in a hurry eat-DIK-agr-acc
soyle-di.
tell-past

'Hasan told that Ercan ate the cake in a hurry'
O_i S [S t_i V] V

These non-finite constructions do not exhibit the predicted subject/object asymmetry, whereas finite ones do exhibit it as may be observed below:

(3)*Ercan$_i$ Hasan [t_i kek-i ye-di] san-iyor.
*subject
cake-acc eat-past think-prog
'Ercan thinks Hasan ate the cake'
*in the intended reading
√ as matrix subject

S_i S [t_i O V] V

(4) Kek-i_i Hasan [Ercan t_i ye-di] san-iyor.
√ obj
cake-acc eat-past think-prog
'Hasan thinks Ercan ate the cake'
O_i S [S t_i V] V

If we argue that it is the finiteness of the clause that makes it a blocking category, we cannot account for the observation on ECM constructions in Turkish below, which are finite, yet pattern like non-finite embedded clauses in terms of allowing subject to be extracted. Compare (5) and (6) in terms of finiteness:

(5) Ahmet [ben-I git-ti(-m)] san-iyor. ECM
I-acc go-past-(agr) think-prog
'Ahmet thinks that I went'

(6) Ahmet [ben git-ti-m] san-iyor. Finite
I go-past-agr think-prog
'Ahmet thinks that I went'

It is important to note two peculiarities of ECM in Turkish:

(i) ECM predicates exhibit a full paradigm of tense morphology just like their finite counterparts;
(ii) subject agreement morphology is optional on ECM predicates.

The former forces us to group ECM under finite constructions , yet, the latter implies some sort of "deficiencyllack of a feature" on T/and or C.

(7&8) below illustrate the observation that ECM constructions do not exhibit subject/object asymmetry in the expected way: it allows subject extraction yet not object extraction!

(7)Ben-i_i Ahmet [t_i kek-i ye-di(m)] san-iyor.
I-acc cake-acc eat-past-lsg think-prog
'Ahmet thinks I ate the cake'

(8)*Kek-$_i$i Ahmet [ben-I t_i ye-di(m)] san-iyor.
cake-acc I-acc eat-past-(lsg) think-prog.

The question that the grammaticality of (7) raises is the location of the lower subject to make sure it launches from inside the lower clause. The answer to this question is, yes, it launches from the lower clause as the adverb test in (9) indicates:

(9) Ahmet [Hasan-i her zaman icki ic-iyor]
-acc always (alcoholic)drink drink-prog
san-iyor.
think-prog
'Ahmet thinks that Hasan always drinks'

The adverb has scope in the lower clause and takes the ECM subject under its clause.

The questions the observations on data raise are:

Q1: Why is subject/object asymmetry not observed in extraction out of non-finite embedded clauses and it is observed in extraction out of finite embedded clauses?

Q2: If finiteness is the phenomenon, how come finite ECM constructions allow extraction of the subject and exhibit the contrast in the opposite direction ?

(10) summarizes the observations:

(10) (i)NF clauses (-dik/-ecek): ✓ sbj ✓ obj ; sbj+gen; obj+acc.
(ii)F clauses : * sbj ✓ obj ; sbj+nom obj+acc.
(iii)ECM : ✓ sbj * obj; sbj+acc; obj+acc.

2. Analysis of the Turkish Data in Terms of T-to-C and EPP

In this section, I will give an analysis for the lack of subject/object asymmetry in non-finite clauses based on Miyagawa (2001) as an answer to Q1 above. Miyagawa (2001) argues that scrambling is an EPP driven movement and T-to-C allows subject and object to be equidistant in terms of meeting the EPP requirement on T. I present some of the arguments for V raising in Turkish and discuss the nature of movement in long distance and clause internal scrambling to attest the predictions of Miyagawa (2001).

2.1. V-to-T-to-C in Turkish

Major arguments supporting V-to-T-to-C in Turkish are based on availability of post-verbal scrambling as an adjunction to CP, licensing of subject NPIs by negation on the verb in both main and subordinate contexts (Kural 1993) [4]. Following is Kural's data on NPIs supporting the V-to-T-to-C in Turkish:

Consider the structures below where post-verbal scrambling is allowed in a root clause (11) and but not in a non-finite embedded clause (12):

(11)Ahmet t_i git-ti **okul-a$_i$**
go-past school-dat
'Ahmet went to school'

(12) *Hasan [[Ahmet-in t_i git-tig-i]ni okul-a] duy-du
-gen go-DIK-agr-acc school-dat hear-past
'Hasan heard that Ahmet went to school'

Considering that postverbal constituents are CP-adjoined in Turkish, Kural (1993, 1997) argues that only if the verb is at the highest head would force post-posed elements to adjoin the highest projection [5].

Theoretically, this argument could as well support the opposite claim: that the availability of post-verbal scrambling is an indication of the lack of T-to-C. V-to-T-to-C derives a structure where post-verbal scrambling of the internal arguments of the verb would result in "adjunction to their own maximal projection" since the CP they adjoin is in fact has complex

head including their own head. Consequently, adjunction of a phrase to its own maximal projection renders such structures ungrammatical. Availability of post-verbal scrambling, therefore, might as well indicate lack of T-to-C in root clauses and finite embedded structures.

Secondly, Kural argues that T-to-C is a regular process and the ungrammaticality of adjunction to the embedded non-finite CP in (12) is accounted for by the general prohibition against adjunction to arguments (Chomsky 1986). This would also account for the grammaticality of (13&14) which indicate that finite clauses allow post-verbal scrambling:

(13) Ahmet [t_i t_j ye-di] $Hasan_i$ $elma\text{-}yi_j$ san-di
eat-past apple-acc think-past
'Ahmet thought Hasan ate the apple'

(14) Ahmet [t_i t_j ye-di] $elma\text{-}yi_j$ $Hasan_i$ san-di
eat-past apple-acc think-past-agr
'Ahmet thought Hasan ate the apple'

Along the lines of Kural's analysis, data in (11-14) would imply that finite clauses must be adjuncts, whereas NF ones are complements and the contrast is expected. If so, we would expect both ECM and finite embedded clauses to be adjuncts rather than complements, which is not the case as will be discussed below. ECM pattern with non-finite embedded clauses in terms of postverbal scrambling and cannot be complements under Kural's analysis, which is refuted by the case-dependency of ECM subjects.

Note that the verbs that select finite clauses also select ECM complements. Consider the grammaticality of (13&14) above with a finite embedded clause and those of the ones with ECM (15&16). ECM complements which are finite in Turkish behave like non-finite embedded clauses in not allowing postverbal adjunction to CP:

(15) *Ahmet [t_i tj ye-di] $Hasan\text{-}i_i$ $elma\text{-}yi_j$ san-di
eat-past apple-acc think-past
intended reading: 'Ahmet thought that Hasan ate the apple'

(16) *Ahmet [t_i tj ye-di] $elma\text{-}yi_j$ $Hasan\text{-}i_i$ san-di
eat-past-agr apple –acc -acc think-past-

If Kural's analysis is correct, we would expect post-verbal scrambling in ECM constructions to be grammatical since, being finite, they must be adjuncts as well. However, the data does not attest Kural's analysis.

Another argument given in favour of the V-to-T-to-C in Turkish (Kural 1993) is subject NPIs being licensed by negation on the verb in both main and subordinate contexts. Consider (17a&b) and (18a&b) below:

(17)a. Kimse gel-me-di
noone come-neg-past
'Noone came'

b.*Kimse gel-di
noone-nom come-past-agr

(18)a. *Hasan [kimse-nin gel-dig-i]ni san-iyor
noone-gen come-DIK-agr-acc think-prog
'Hasan thinks noone came'

b. Hasan [kimse-nin gel-me-dig-i]ni san-iyor
noone-gen come-neg-DIK-agr-acc think-prog
'Hasan thinks noone came'

The NPI kimse 'noone' in (17b) and (18a) is argued to be licensed by negation on verb at C where it c-commands the subject (at Spec TP) (Kural 1993). (17&18), however, only shows that the NPI *kimse/*noone needs negation, It does not show that it must be c-commanded by the negative morpheme at C, i.e.that V+T is at C.

To conclude: Based on the discussion and evidence above, I propose the opposite analysis: post-verbal scrambling is allowed in constructions where there is no T-to-C; in root clauses and finite embedded clauses V is at T not at C.

2.2. C(lause) I(nternal) S(crambling)

Miyagawa (2001) predicts subjects to be at Spec TP in SOV order sentences and at objects to be at Spec TP in OSV, considering that CIS is an EPP driven movement. In order to test the position of the first argument in Turkish CIS, we can make use of manner adverbs that mark the TP/VP border:

(19) a. Ercan [Hasan-in cabucak kek-i ye-dig-i]ni soyle-di.
-gen quickly cake-acc eat-DIK-agr-acc tell-past
'Ercan told that Hasan ate the cake quickly'
……[S Adv O V]…….

b.* Ercan [cabucak Hasan-in kek-i **ye-dig-i]ni** soyle-di
quickly **-gen** cake-acc eat-DIK-agr-acc tell-past
……..[Adv S **O** V]**……**

(20)a. Ercan [kek-I cabucak Hasan-in **ye-dig-i]ni** soyle-di
cake-acc quickly **-gen** eat-DIK-agr-acc tell-past
'Ercan told that **Hasan** ate the cake quickly'
……..[O Adv S V]**……**

b.*Ercan [cabucak kek-i Hasan-in **ye-dig-i]ni** soyle-di.
Quickly cake-acc **-gen** eat-DIK-agr-acc tell-past
*…….[Adv O **S** V]…….

The adverb test above indicates that the first argument needs to be at Spec TP in **Turkish.** The following structure where both arguments are above the manner adverb implies that either the object is in an A' position or there are two A positions above the adverb:

(21) Ercan [kek-I Hasan-in cabucak **ye-dig-i]ni** soyle-di.
Case-acc **-gen** quickly **eat-DIK-agr]acc** tell-past
'Ercan told that **Hasan** ate the cake quickly'

Where is the object in **[OSV]** and [OS ADV V] ? At an A or A' position?

23. Nature of Movement in Scrambling

The position of the object can be determined by testing the nature of the movement in CIS. The Condition-C test below indicates that there is no reconstruction and the structure is grammatical; hence (22) is an instance of local A-movement. Object is in an A position in [OSV].

(22) **Hasan [[Ayse-nin$_i$ kek-i]$_j$ni o$_i$-nun t$_j$ ye-dig-i]ni** san-di.
-gen cake-acc she-gen eat-DIK-agr-acc think-past
'Hasan thought that Ayse's cake, she ate' mimicking the Turkish data.
…[[O] S V]……

(22') **Hasan [[Ayse-nin$_i$ kek-i]$_j$ni o$_i$-nun t$_j$** cabucak **ye-dig-i]ni**
-gen cake-acc she-gen quickly eat-DIK-agr-acc
san-di.
think-past
'Hasan thought that Ayse's cake, she ate quickly' mimicking the Turkish data.

…..[[O] S Adv V]…..

(22') shows that object is in an A position in the [OS ADV V] too. In (21) then, both the object and the subject are at A positions above the adverb. Considering that it is a contrastive focus construction, we can argue that the adverb must have undergone focus shift to the preverbal focus position.

As for the nature of movement in LDS, Cond-C test in (23) shows that LDS takes place in two steps: **A+A'** movement.

(23) [Ayse-nin$_i$ kek-i]$_j$ni Hasan [t_j o_i-nun t_j ye-dig-i]ni san-di.
-gen cake-pos-acc she-gen eat-DIK-agr-acc think-past
'Ayse's cake, Hasan thought that she ate'

Reconstruction to the intermediary position , which is an A position renders the structure grammatical. Consider the contrast in the grammaticalty judgements of (22) vs. (24), which indicates that (24) is an instance of long distance A' scrambling:

(24)* [Ayse-nin$_i$ kek-i]$_j$ni o_i [t_j Hasan-in t_j ye-dig-i]ni] san-di.
-gen cake-pos]acc she -gen eat-DIK-agr-acc think-past

3. T-to-C and EPP analysis

Miyagawa (2001) argues that there is a V-to-T movement in Japanese which allows both subject and object to be equidistant from T and that EPP is on T. Consequently, both SOV and OSV word orders result from a single obligatory movement triggered by the EPP. The option to move the object in [OSV] into Spec TP to meet the EPP requirement is made possible by V raising to T. I would like to discuss two predictions this analysis makes in Turkish:

(i) Adjuncts cannot satisfy the EPP.

Consider the structure in (25) below where an adjunct in the sentence initial position renders the structure ungrammatical:

(25) *Hasan [[Ayse$_i$-nin ev-i]$_j$nde o_i-nun t_j dans et-tig-i]ni
-gen house-pos-loc she-gen dance do-DIK-agr-acc
san-di.
think-past
Hasan thought that at Ayse's house she danced'

The Cond-C violation in (25) indicates that adjunct movement is not an EPP driven movement; it is an instance of A' movement. Note that the contrast between (22) and (25) is crucial. In (22), the scrambled constituent is is an argument, in (25) it is an adjunct.

(ii) [Adjunct Adv S O V] order should be ungrammatical in Turkish since Adjuncts cannot meet the EPP requirement at Spec TP.

This prediction is attested in the Turkish data in (26) below:

(26)a. *Ercan [[Nafe-nin ev-i]nde cabucak Hasan-in kek-i ye-dig-i]ni soyle-di.
-gen house-pos-loc quickly -gen cake-acc eat-DIK-agr-acc tell-past

intended meaning:'Ercan told that Hasan ate the cake quickly at Nafe's house'
……..*[Adjunct Adv S O V]……

b. Ercan [[Nafe-nin ev-i]nde kek-i cabucak Hasan-in ye-dig-i]ni soyle-di
-gen house-pos-loc cake-acc quickly -gen eat-DIK-agr-acc tell-past
'Ercan told that Hasan ate the cake quickly at Nafe's house'
…….[Adjucnt O Adv S V] ……..

The contrast in (26a&b) and (22&23) indicate that only arguments can satisfy EPP and arguments occur at SpecTP, whereas adjuncts cannot.

3. Analysis for Subject-Object Asymmetry in Finite Embedded Clauses

Since we have already argued that there is no T-to-C in finite clause, we expect to observe a subject/object asymmetry in these clauses which indeed is the case. We have already disregarded the finiteness parameter by observing subject extraction out of finite ECM constructions. Except for finiteness, non-finite and finite embedded clauses differ in one more aspect: subjects of finite embedded clauses are in the nominative case whereas subjects of non-finite clauses are in the genitive. Since Chomsky (1973) proposed Tensed S Condition and NIC (1980), the significance of nominative subject has been studied. A recent proposal by Pesetsky and Torrego (2000) is relevant on the issue. P&T suggest that nominative case feature is in fact Tense and occurs as an uninterpretable Tense feature (*u*T) on nominative DPs and functional heads T and C. Under the Chomsky (1999) framework, uninterpretable features need to be deleted by a PROBE/AGREE or/and MOVE operation before the phase closes off or the derivation crashes at LF. P&T argue that the *u*T on C can be deleted either by head movement of T to C or by the phrasal movement of nominative DP (subject) to Spec CP.

P&T (2000:29) argue that the Aux inversion asymmetry observed (27&28) corresponds to the T-to-C accompanied by an object wh-movement (27) and lack of T-to-C when subject wh-movement satisfies *u*T on C:

(27) What did John buy?
(28) Who bought a car?

What differs in finite clauses is that since there is no T-to-C movement to delete the *u*T on C, the nominative subject has to serve this function and delete its *u*T at Spec TP. Once it does so, it is inactive for further extra-clausal operations, whereas, the non-nominative object is still active for further movement (specifically A' movement to the higher clause). This account poses various options for the location of the subject and the object in finite embedded clauses since both SOV and OSV orders are possible in Turkish.

Our analysis predicts that in OSV order subject is frozen in *situ* and deletes its *u*T via AGREE with T and object moves to Spec TP to satisfy EPP and thus is allowed to move further. Consider the following data where a scopal element *ancak/only*, which has a strictly local scope takes the subject under its scope:

(29) Bu soru-nu ancak Ayse coz-er.
This problem-acc only solve-aor
'Only Ayse can solve this problem'

A theory internal evidence is a parallel issue in ECM constructions where the accusative marked internal argument of the lower verb is in situ and inactive for even clause internal movement.

4. The ECM puzzle

In the sections above, it has been argued that A scrambling within embedded contexts and the absence and presence of a subject/ object asymmetry in Turkish can be accounted by the theory posited by Miyagawa (2001) and the *u*T analysis of Pesetsky&Torrego (2001). Under this analysis, scrambling is not an optional operation but an obligatory feature driven process. The asymmetry between subject and object is not dependent on the finiteness of the clause per se but to the presence or lack of *u*T on C. Non-finite embedded clauses are headed by a *–uT* C whereas finite ones are headed by a *+u*T head.

The ECM puzzle where the subject and object asymmetry is observed in the opposite direction may be accounted for along with the EPP analysis in terms of subject extractability and parallel with subject-object asymmetry in finite clauses in terms of unavailability of object extractability. Remember that ECM constructions are tensed/finite yet they lack *u*T as apparent from the lack of a nominative subject, and optionally, they also lack phi features like agreement since there is an optionality (or dialectal variation) in the usage of the agreement morphology. Considering that lack of tense has been posited as an argument in favour of a CP-deletion analysis for English ECM, I analyze ECMs in Turkish as XPs since there is no motivation to delete CP in tensed Turkish ECMs.

If CPs how come they are selected by +acc verbs unlike other tensed CPs? Not the name of but the features on the head are important. In fact, in the long run I will propose a neutral head which is defined by its feature; such an approach would eliminate the discussion over the nature of subordinate clauses. In any case, the head of ECM XPs lacks *u*T and agreement features. T-to-C and EPP analysis presented for other subordinate clauses applies to ECM subjects, too; hence their extractability.

Note that the second half of the ECM puzzle, which is the unavailability of extracting/scrambling the ECM objects, patterns with the behaviour of nominative subject of finite clauses. An account in line with the uT feature of P&T (2001) in some respect, for the presence of subject/object asymmetry in finite embedded clauses applies to presence of the

asymmetry in ECMs. Remember that nominative subject in finite embedded clauses (+*u*T CPs) is inactive for further operations once its *u*T is deleted and therefore cannot undergo LDS. Nominative case feature, that is *u*T is the crucial feature on the head of these phrases, and the argument that bears the same feature is ***inactive*** once it is deleted (either by T-to-C or by AGREE with T; in Turkish, the latter would apply). Similarly, in ECM type constructions, the only structural case assigned and checked/deleted within the clause is the accusative case on the internal argument; the head ***v*** of the construction (within the PHASE) bears a feature referring to another structural case, namely Accusative. The argument which bears the feature on the head of its phase and deletes it within the clause (by AGREE with v) is inactive for further syntactic operations, unless motivated by an A' feature (focus-right dislocation such as '' Ahmet Ercan'I yedi keki sandi/Ahmet thought Ercan ate the cake (in the English word order-SVO)'' hence the unextractability of the accusative object.

It might as well be the case that *u*T is the structural case (nominative) on C whereas a parallel feature on v is what de-activates the accusative object in ECMs; this parallelism would be supported by further research if we have evidence that ECMs are in fact smaller structures than CPs with deficient Ts that lack *u*T and phi features. It is very likely that the only phase within ECM is at v .This possible account is worth pursuing since the parallel nature of v and C has been suggested in terms of bearing an EPP feature and being phases (Chomsky 1999) [6].

5. On the Condition on LDS (Karimi 1999)

The observations on the presence or absence of subject/object asymmetry in Turkish scrambling ***seems*** to be accountable by Karimi's condition on LDS; however, I will argue that although her account predicts that of the two elements bearing the same feature in terms of grammatical function only the higher of the two may scramble, this prediction is not attested in terms of ***grammaticalfunction*** in Turkish. Constituents can scramble over elements with the same grammatical function (subject of non-finite clauses) and elements with different grammatical function may –seem to- block scrambling (subject of ECM superficially blocks object of ECM) in Twkish. I will argue that restating her condition on LDS by its relevance to ***case*** rather than ***grammatical function*** resolves the two contradictory Turkish data but such a re-statement of the Condition on LDS, in fact, supports the analysis presented in this paper.

Karimi (1999) argues that, although scrambling is not subject to M(inimal)L(ink)C(ondition) of Chomsky (1995) –as has been discussed in Saito and Fukumi 1998- it becomes relevant when there is more than one

element bearing the same feature and competing for the same landing site. She proposes a condition on LDS (given in (30)). She suggests a discourse feature D on C that triggers LDS; D on C is sensitive to certain properties of YP in that if there is an XP identical in grammatical function to YP in a position closer to C, it blocks the movement of YP

(30) Condition on LDS (Karimi 1999)
LDS is blocked if
* YP_i a XP_α [t_i]
where a represents a specific grammatical function.

The condition on LDS predicts a subject/object asymmetry in non-finite clauses in Turkish since (30) would rule out scrambling of a lower subject over a higher subject yet such a movement is perfectly grammatical in Turkish. Furthermore, this condition does not account for the unextractability of ECM objects since there is no XP with the same grammatical function (that of object) intervening; yet , there is an XP, the lower subject which case marked accusative just like the ECM object. Considering the Condition on LDS in terms of ***Case*** rather than ***grammatical function*** would describe the puzzle [7]If a condition where ***case*** is relevant rather than grammatical function ***per se*** is employed, the presence of subject-object asymmetry in finite embedded clauses and lack of it in non-finite clauses is also accountable since the higher subject is nominative in the data and the lower subject is in the Genitive case in the non-finite clauses and accusative in the ECMs whereas it is nominative in finite embedded clause. The genitive subject carries the same grammatical function as the higher subject yet differs in case and does not violate the Condition on LDS rephrased in terms of case. Consider the cases of scrambling out of deeply embedded constructions below:

(31) Ahmet [Mehmet-in [Nafe-nin kek-i ye-dig-i]ni
-gen -gen cake-acc eat-DIK-agr-acc
bil-dig-i]ni tell-past
know-DIK-agr-acc soyle-di.

'Ahmet told that Mehmet knows that Nafe ate the cake'

(32)*Ahmet [$Nafe\text{-}nin_i$ Mehmet-in [t_i kek-I ye-dig-i]ni
-gen -gen cake-acc eat-DIK-agr-acc
bil-dig-i]ni soyle-di.
know-DIK-agr-acc tell-past

Although there is no subject/object asymmetry in non-finite clauses in Turkish, the ungrammaticality of (32) appears to conform to the rephrased version of Karimi's condition on LDS by banning subject scrambling over another subject. However, the ungrammaticality of (32) might as well be due to a processing problem rather than a syntactic one. Moreover, claiming that ***case*** rather than ***grammatical function*** is relevant for Condition on LDS to account for the Turkish data supports the analysis presented in this paper. The "restated version of the Condition on LSD, that is the claim that scrambling over a constituent with the same case is forbidden is simply a description of the facts. This description is more properly explained theory internally in terms of Pesetsky &Torrego's (2001) inactive nominative DP in finite embedded clauses and the inactive accusative DP in ECM is case is some tense feature on DPs. [8]Therefore, Karimi's condition does not necessarily undermine the EPP analysis and the account for DPs inactive for clause external operations presented in this paper. Our analysis accounts for both local A-scrambling and presence or absence of subject/object asymmetry in subordinate clauses in Turkish. It predicts the peculiar behavior of ECM objects as well as structures Karimi accounts for by her Condition on LDS.

6. Conclusion

I have given a unified account for the nature of movement in Turkish scrambling and the subject/object/adjunct symmetry.

(i) Scrambling is a feature driven obligatory process EPP driven in instances of A-movement and Focus driven in instances of A'-movement;

(ii) **accounts for argument/adjunct asymmetry observed subordinate contexts;**

(iii) accounts for the absence of subject/object asymmetry in non-finite subordinate clauses;

(iv) the DP which bears the same feature with the highest head within the phase is inactive for extraclausal syntactic processes;

(v) the unextractability of nominative subject in finite embedded clauses and the unextractability of accusative object of ECM constructions are accounted for by (iv).

The analysis presented in this paper poses further questions: why is accusative object not inactive in non-ECM constructions? They are active in terms of Focus/Topic movement (A') since they can A-move to satisfy EPP before A' move. It follows that ECM ***v*** is also deficient in that its internal argument cannot satisfy EPP; hence cannot move further as well.

7. Endnotes

[1] I would like to thank Shigeru Miyagawa, Norvin Richards. David Pesetsky and Lynn Nichols for their valuable comments and the audience at WECOL2000.

[2] Kural (1993) regards the so called non-finite subordinate clauses as finite as well. This in fact would make the question whether "finiteness" is the parameter that "blocks" extraction more valid: For further discussion see Tosun 1999a.

[3] The –DIK suffix is analyzed as Dl-K by Kural (1993) where he assumes –K to be a Complementizer in subordinate predicates in Turkish. For a discussion of his arguments see Tosun 1999. This issue is irrelevant to the discussion of T-to-C here since the verbal complex bearing the-K moves to C.

[4] Non-finite refers to the unavailability or lack of Nominative subject, or *u*T on C in the sense given in Torrego and Pesetsky (2000) and to the lack of a full Tense paradigm in these structures.

[5] Postverbal adjunction of constituents to CP is also consistent with subject NPI being licensed by negative in the verbal complex, post-verbal QPs escaping the scope of subject QPs or preverbal adverbs (Kural 1997).

[6] This approach is also supported by the observations and analysis on the semantic properties of case, and scope independency of DPs with overt case morphology to any scopal element higher in the structure in Turkish (Tosun 1999 April on Specifity and scope interactions of Subjects and Objects in Turkish). If *v*P is a phase where the object deletes its case feature and is interpreted then its immunity to a scope bearing subject which deletes its feature at a higher location and is interpreted at a later phase (CP), the observation and analysis in Tosun (1999) follows naturally. As for the availability of right-dislocation trigerred by a focus feature in contrast with the unavailability of a left-dislocation, it suffices to say that the former differs from the latter in terms of locality.

[7] Karimi (1999:footnote 16) suggests that her condition on LDS interacts with case.

[8] Note that P&T's account for inactive nominative DPs complies with Karimi's MLC requirements. In P&T's account, T-to-C rather than the movement of the nominative DP is what deletes *u*T in some constructions in English and the nominative DP is inactivated by deleting its feature at Spec TP. In Turkish, however, in structures with V-to-T-to-C, nominative DP is inactive for clause external syntactic operations and the preference of head movement over phrasal movement is not an issue and the closeness of T to C (ACX in P&T and MLC in Karimi) is irrelevant.

8. References

Aygen-Tosun, G. 1999a. Embedded Clauses in Turkish: Extraction Possibilities. Presented at Ford Foundation Fall Syntax Workshop at Harvard University.

Aygen-Tosun, G. 1999b. Specificity and Subject /Object Scope Interactions in Turkish. (to appear in) ***Proceedings of the 1 International Conference in Turkic Linguistics,*** Manchester: Manchester University Press.

Aygen-Tosun. G. 1998c. The Adverb Positions and Functional Heads in Turkish. To appear in ***Proceedings Of the VI International Conference in Turkish Linguistics,*** Oxford: Oxford UniversityPress.

Chomsky, Noam. *1998. Minimalist Inquiries: the Framework.* Cambridge: *MTWPL.*
Chomsky, Noam. *1999. Derivation by Phase.* Cambridge: MITWPL. 18.
Chomsky. Noam. 1981. *Lectures on Government and Binding. The Pisa Lecture.*, Dordrecht: Foris.
Karimi, *S. 1999. Is Scrambling* Strange?. *Papers on Morphology and Syntax Cycle One,* Arregi, Bruening, Krause *and Lin (eds), Cambridge: MITWPL 33.*
Kennelly, Sarah D. 1992. Turkish Subordination [-Tense, -CP, +Case], *Modern Studies in Turkish Linguistics,. Proceedings of the 6th intrnational conference on Turkish Linguistics, (ed)* Ahmet Konrot. Anadolu *University, Eskisehir, Turkey.*
Kural, Murat. *1993. V-TO(-I-TO)-C in Turkish. UCLA Occasional Papers in Linguistics, v.11.* ed. Filippo Beghelli & Murat *Kural.*
Kural, Murat. *1992. Properties of Scrambling in* Turkish.ms *UCLA.*
Miyagawa, *S.* 2001. *EPP, scrambling and wh-in-situ. Ken Hale: A Life in Language.* ed. Michael Kenstowicz, Cambridge: MIT Press.
Pesetsky, David and Esther Torrego. 2001. *Tense to C: Causes and Consequences. Ken Hale: A Life in Language.* ed. Michael Kenstowicz, Cambridge: MIT Press.
Pesetsky, D. 1998. *Phrasal Movement and its Kin.* ms. MIT.

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Reduplicants are Roots in Sḵwx̱wú7mesh (Squamish Salish)*

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1 Introduction'

The goal of this paper is to account for the surface patterns of two partial reduplicants in **Squamish**[2]. CVC reduplicants in Squamish are copies of the first two consonants of the root and have a fixed schwa They do not bear stress when their bases contain full vowels (1a), but do when the base contains a schwa (lb):

(1) a.	[kʷópits]	**kwúpits**	'elder sibling'
	[kʷəp-kʷópits]	**kwep-kwúpits**	'elder siblings'
b.	[kʼʷəɬ]	kw'elh	'spill (intransitive)'
	[kʼʷə́ɬ-kʼʷəɬ]	**kw'élh-kw'elh**	'spill repeatedly (intransitive)'

CV reduplicants are a copy of the first two segments of the root. They bear primary stress (2a) or secondary stress (2b):

(2) b.	[tʼájaq]	**tʼáyak̓**	'get angry'
	[tʼá-tʼajàq]	**tʼá-tʼayàk̓**	'be angry'
c.	[χəhm]	**x̱ehm**	'cry'
	[χə́-χəhám]	x̱é-x̱chám	'a group crying/crybaby'

It has been argued for other Salish languages that the reduplicative domain exhibits a root-affix asymmetry whereby smaller reduplicants, such as CV- or

-VC, behave like affixes and larger reduplicants, such as CVC, behave like roots (Urbanczyk 19%). The central claim of this paper is that CVC and CV reduplicants in Squamish are *both* root-like, though not *perfect* roots: CVC reduplicants require a default schwa and thus differ from the root featurally, CV reduplicants have only two segments and thus differ from the root segmentally.[3]

The theoretical framework adopted for the present analysis is that of Optimality Theory (Prince and Smolensky 1993, McCarthy and Prince 1993). In particular, I follow recent proposals by McCarthy and Prince (1994, 1999), namely, *Generalized Template Theory* (GTT), in which the reduplicative template is eliminated and the shape of reduplicants is derived by independently motivated prosodic constraints relevant in the entire grammar. They state that reduplicants are classified as either a *stem* or an *a* . and are distinct from other morphemes in the grammar in that they have no segmental content in their input (see Nakamura 2000, Spaelti 1997, and Urbanczyk 1996 for accounts of reduplication in a GTT framework).

Examining Lushootseed (Coast Salish) reduplication, Urbanczyk (1996) extends McCarthy and Prince's proposal and argues that *roots* are a possible reduplicant category. I argue that the root-affix asymmetry in Lushootseed is not attested in Squamish. Rather, both Squamish reduplicants examined in this paper are root-like, even though CV is predicted to be affix-like by Urbanczyk's approach. As a result, the generalized template adopted in this paper is ROOT=σ, which applies to both CVC and CV reduplicants (in addition to roots). The shape and segmental content of the reduplicants are accounted for by the interaction of BR-Faithfulness constraints and markedness constraints on segments and features. The interaction of these constraints with 10-Faithfulness constraints results in an *emergence-of-the-unmarked* effect (McCarthy and Prince 1994. 1999. Alderete et al. 1999) whereby marked material that is prevalent throughout the language is banned in root-like reduplicants. This explains that while reduplicants in Squamish are roots, they are not *perfect* roots.

2 Squamish CVC Reduplicants are Root-Like

CVC reduplicants are root-like in that the canonical root shape in Squamish (and across Salish) is CVC. Dyck (2000) shows that the basic syllable template in Squamish is CV(R)C (where R is a sonorant). She observes that approximately

70% of freestanding roots in Squamish are monosyllabic, of which 80% have simple onsets and 99% of those with lexical meaning have a coda (and over half of those have simple codas).

Further evidence that CVC reduplicants are root-like is based on stress facts; reduplicants follow the basic stress pattern exhibited by roots. Squamish exhibits a trochaic stress pattern in which the leftmost vowel in a word bears stress:

(3)	a. [(nétʃim)]	níchim	'speak, talk'
	b. [(míχaɬ)]	míxalh	'black bear'

However, the Squamish stress system is quality sensitive: the leftmost full vowel of a word bears stress. In bisyllabic words containing a schwa in the first syllable and a full vowel in the second syllable, the full vowel bears stress:[4]

(4)	a. [(wənáχʷ)]	wenáxw	'true/truth'
	b. [(sqʷəmáj')]	skwemáy'	'dog'

We observe the same stress pattern in reduplication. When a CVC reduplicant is prefixed to a monosyllabic (5a) or bisyllabic (5b) root containing a full vowel in its first syllable, the leftmost full vowel of the word, which is contained in the root, bears primary stress:

(5)	a. [lám']	lám'	'house'
	[ləm-lám']	lem-lám'	'houses'
	b. [kʷópits]	kwúpits	'elder sibling'
	[kʷəp-kʷópits]	kwep-kwúpits	'elder siblings'

Roots permit marked phonological structure, such as stressed schwa. When there are no full vowels in a given word, stress targets the leftmost schwa:

(6)	a. [(t'ə́ləm)]	t'élem	'bark from a wild cherry tree'
	b. [(χə́tsʔ)]	xéc7	'far'

Reduplicants pattern with roots phonologically in that they too permit stressed schwa When a CVC reduplicant is prefixed to a monosyllabic root containing a schwa, the reduplicant bears stress:

(7)	a. [qʷəl]	kwel	'think, mind, speak'
	[qʷ51qʷal]	kwél- kwel	'talkative'
	b. [k'ʷəɬ]	kw'elh	'spill (intransitive)'
	[k'ʷə́ɬ-k'ʷəɬ]	kw'élh-kw'elh	'spill repeatedly (intransitive)'

Squamish builds trochaic feet iteratively from left to right. In trisyllabic words, the initial syllable bears primary stress and the final syllable bears secondary stress:'

(8)	a. [(sxóxo)(pèt)]	shúhupìt	'rabbit'
	b. [(mála)(lòs)]	málalùs	'raccoon'

This alternating stress pattern is observed with reduplicants. When a CVC reduplicant is prefixed to a bisyllabic root containing a schwa in the first syllable and a full vowel in the second, primary stress falls on leftmost full vowel of the word and the reduplicant bears secondary stress:

(9)	a. [s-nəχʷéɬ]	s-neχwílh	'canoe'
	[s-nə̀χʷ-nəχʷéɬ]	s-nèχ-neχwílh	'canoes'
	b. [s-qʷəmáj']	s-kwemáy'	'dog'
	[s-qʷə̀m-qʷəmáj']	s-kwèm-kwemáy'	'dogs'

Non-reduplicative prefixes in Squamish are outside of the stress domain. They never bear stress, even when it appears as though they are in a stress bearing position, for example, when it contains the leftmost full vowel of the word:

(10)	a [ti-lám']	ti-lam'	b. [ti-náʔ]	ti-ná7
		make-house		fm-LOCATIVE
		'build a house'		'be from'

When the prefix contains the leftmost schwa in a word with only schwas, it does not bear stress, even though it is predicted to by the basic stress pattern:

(11)	a [ʔəs-sə́q']	7es-sék'	b. [ɬəɬ-tʃə́tʃəmx]	lhelh-chéchmx
		STATIVE-split		ingest-resin
		'half		'chew resin/gum'

From these facts, we conclude that the stress domain contains both roots and CVC reduplicants, but not non-reduplicative prefixes. This provides evidence for a distinction in Squamish between the Prosodic Stem, the domain in which stress is assigned, and the Prosodic Word, the domain which is outside of the stress domain. Thus, roots and CVC reduplicants are contained within the Prosodic Stem (PS) and non-reduplicative prefixes are contained outside of the Prosodic Stem, in the Prosodic Word (PW) (this representation includes only morphemes that surface at the left edge of the root):[6]

(12) $[_{PW}$ **Prefixes** $[_{PS}$ **RED, Root** $_{PS}]$ $_{PW}]$

If reduplicants are also considered roots, they are straightforwardly expected to be in the stress domain. We can then account for the fact that reduplicants follow the basic stress pattern exhibited by roots in Squamish. Note that since further structure within the Prosodic Stem cannot yet be motivated, none is provided in (12). I leave this issue for further research.

To summarize, the generalizations about CVC reduplicants that need to be accounted for are as follows: (i) it is a prefix, (ii) its size (one syllable) (iii) its shape (CVC and not CV), and (iv) it always contains a schwa.

Since the constraints in this analysis make explicit reference to roots the Squamish grammar must state explicitly that CVC reduplicants are roots (see Urbanczyk 19%):

(13)	*Morpheme*	*Shape*
	RED$_i$	Morphological Category (MCat)=Root

Thus, constraints on roots evaluate CVC reduplicants as well.

Roots in Squamish always surface at the left edge of the Prosodic Stem. Given the claim that reduplicants are roots, we invoke a general constraint on root alignment, which evaluates both roots and reduplicants, to capture the fact that reduplicants in Squamish surface as prefixes. Violations of this constraint are calculated on a segment-by-segment basis:

(14) ALIGN-L (ROOT, PS)
Align the left edge of the root with the left edge of the Prosodic Stem

Thus we have a more general way of capturing alignment and we do not require a separate constraint on the alignment of reduplicants:

(15) *Prefixal status of reduplicants*

/s - RED$_1$ – təqəw/ 'horses'	ALIGN-L (ROOT, PS)
☞ a. [$_{PS}$ s- [$_{R}$ təq-təqəw]	***
b. [$_{PS}$ s- [$_{R}$ təqəw-təq]	****!*
c. [$_{PS}$ təq-s- [$_{R}$ təqəw]	****!

Crucially, alignment must be to the Prosodic Stem in order to ensure that non-reduplicative prefixes are not part of the base for reduplication and that the reduplicant surfaces to the left of the base, within the Prosodic Stem (15a), and not at the left edge of the Prosodic Word which may contain a non-reduplicative prefix (15c). This alignment constraint also prevents candidates in which the reduplicant is a suffix from surfacing (15b).

The core claim of Generalized Template Theory is that reduplicant shapes can be derived via general principles already at work in the grammar. This is the case in Squamish where CVC reduplicants are root-like and so are predictably subject to conditions on roots. We have seen that the majority of roots are monosyllabic and that CVC reduplicants are also monosyllabic. Thus, it would be redundant to have a prosodic template for roots and one for reduplicants since they are subject to the same constraint, namely that they be exactly one syllable:

(16) ROOT=σ
A root must be exactly one syllable

Violations of this constraint are calculated on a syllable-by-syllable basis. Since in this analysis both the root and the reduplicant are classified as roots, this constraint evaluates both morphemes individually.

To ensure that CVC reduplicants surface with the correct shape, they are subject to a faithfulness constraint that requires the reduplicant to copy as much of the base as possible:

(17) Max-BR-RED$_1$
Every segment in the base has a correspondent in RED$_1$.

In this analysis, faithfulness constraints are specific to the reduplicant type. They must be specified as to whether they are evaluating CVC reduplicants (RED,) or CV reduplicants (RED_2) since they are ranked separately in the grammar.[7]

In Squamish, it is more important for the reduplicant to be monosyllabic than it is for the reduplicant to be identical to its base. As a result, Root=σ is crucially ranked above Max-BR-RED,:

(18) ROOT=σ >> MAX-BR-RED

IRED, – k^{w}opits/ 'elder siblings'	ROOT=σ	MAX-BR RED_1
☞ a. k^{w}əp-k^{w}opits	*	**
b. k^{w}opits-k^{w}opits	**!	

Following Alderete et al. (1999), I assume that the default vowel in Squamish RED, is schwa because it is the least marked vowel in the language. I assume that vowels bear the same place features as consonants: [labial] for round vowels, [coronal] for front vowels, [dorsal] for back vowels and [pharyngeal] for low vowels (Clements and Hume 1995). Schwa does not bear any features (Halle and Mohanan 1985)[8]. Thus, each of the full *vowels* (vowels other than schwa) have a V-Place node specifying one or more features, while schwa has only a root node:

(19) *V-PLACE
Vowels with place features are marked

Schwa does not incur any violations of (19), but every other full vowel does.

Given that CVC reduplicants differ from roots featurally, they must also be subject to a feature faithfulness constraint on vowel place features:[9]

(20) IDENT-BR-[V-FEATURE]-RED_1
Corresponding vowels the base and RED_1 must have identical vowel features

In Squamish, it is more important that the CVC reduplicant avoids surfacing with a marked vowel than it is for the reduplicant to be featurally identical to its base. As a result, *V-PLACE is crucially ranked above IDENT-BR-[V-FEATURE]-

RED,. It is in this ranking that we observe the emergence-of-the-unmarkedeffect whereby **CVC** reduplicants look less like roots:

(21) *V-PLACE >> IDENT-BR-[V-FEATURE]-RED,

/RED, – k"opits/ 'elder siblings'	*V-PLACE	IDENT-BR [VF]-RED,
☞ a. k"ɔp-k"opits	**	*
b. k"op-k"opits	***!	

The following is the constraint ranking that accounts for **CVC reduplication:**[10]

(22) *Final Ranking for CVC Reduplicants*
ROOT=σ >> *V-PLACE >> MAX-BR-RED, , IDENT-BR[VF]-RED,

This ranking correctly predicts the optimal output for all *cases* of **CVC** reduplication. The following tableau provides an illustration:

(23) *Bisyllabic bases containing two full vowels*

/RED, – mɛχat/ 'black bears'	ROOT =σ	*V-PLACE	MAX-BR RED,	IDENT-BR [VF]-RED,
☞ a. mɔχ–mɛχat	*	**	**	*
b. mɛχ–mɛχat	*	***!	**	
c. ma–mɛχat	*	**	***!	*
d. mɛχat–mɛχat	**!	****		

Candidates **(23a)** and **(23b)** show that it is more important for **CVC** reduplicants to avoid marked vowels (in this analysis, any full vowel), than it is to preserve feahual identity between the base and reduplicant. **Candidates (23a)** and **(23c)** show that the best **CVC** reduplicant is one which copies a second consonant. Candidates **(23a)** and **(23d)** show that in **Squamish** it is more important that **reduplicants** be monosyllabic than it is for reduplicants to copy as much of its base as possible.

The tableau in (24) illustrates that this **ranking** accounts for reduplicated **forms** whose **bases** are bisyllabic **roots** containing a schwa in the first syllable and a full vowel in the second syllable:

(24) *Bisyllabic stem containing a schwa and a full vowel*

/s - RED_1 – taqew/ 'horses'	ROOT= σ	*V-PLACE	MAX-BR RED_1	IDENT-BR [VF]-RED_1
☞ a. s-taq–taqew	*	*	**	
b. s-taq–taqew	*	**!	**	*
c. s-ta–taqew	*	*	***!	
d. s-taqew–taqew	**!	**		

Candidates (24a) and (24b) illustrate that when a candidate preserves complete featural identity with its base (a) it may still incur a violation of ***V-PLACE** if there are full vowels elsewhere in the word. However, a candidate that inserts a vowel feature in its reduplicant that is not present in its base (c) not only incurs violations of ***V-PLACE** but also incurs a violation of **featural** identity (IDENT-BR[VF]-RED_1). This ranking also correctly predicts reduplicated monosyllabic roots containing a schwa, which yield total reduplication.

Thus far we have seen that **CVC** reduplicants exhibit root properties and how their size, shape and segmentism are predicted. In the next section, I provide evidence that **CV** reduplicants are also roots in Squamish and show their size, shape and segmentism are predicted by the same constraints.

3 Squamish CV Reduplicants are Root-Like

Recall from the data in (2) above that **CV** reduplicants are copies of the first and second segments of the base. In this section I show that **CV** reduplicants in Squamish, like **CVC** reduplicants, are also root-like.

As shown in (10-11) above, prefixes in **Squamish** are outside of the stress domain, in the Prosodic Word. **CV** reduplicants, however, are within the stress domain, the Prosodic Stem, along with **CVC** reduplicants. They bear either primary or secondary stress, which is typical of roots, and they follow the basic stress pattern exhibited by roots and **CVC** reduplicants, which have already been shown to be root-like.

When a **CV** reduplicant is prefixed to a monosyllabic root, the reduplicant, which contains the leftmost full vowel of the word, bears primary *stress:*

(25) a.	[kʷ'aj']	kw'ay'	'get **hungry**'
	[kʷ'á-kʷ'aj']	kw'á-kw'ay'	'be **(very) hungry**'
b.	[t'ájaq]	t'áyak	'get **angry**'
	[t'á-t'ajàq]	t'á-t'ayàk	'be angry'

When a CV **reduplicant** is prefixed to a bisyllabic root containing a schwa in the first syllable and a full vowel in the second syllable, the full vowel of the root bears primary stress, and the reduplicant bears secondary stress, as in the alternating patterns observed in (8-9) above:

(26) a.	[χə̀-χəw'és]	xè-xew'ís	'be **newly wed**'
b.	[χəhm]	xehm	'cry'
	[χə̀-χəhám]	xè-xehám	'a group crying/crybaby'

We can account for the fact that CV reduplicants in Squamish must also be contained within the stress domain, the Prosodic Stem, since they follow the basic stress pattern exhibited by roots and CVC reduplicants:

(27) $[_{PS}$ Prefixes $[_{PS}$ RED_2 Root $_{PS}]$ $_{PS}]$

As with CVC reduplicants, if CV reduplicants are also considered roots, they are straightforwardly expected to be in the stress domain. Furthermore, this allows for a unified account of **both** reduplicants in Squamish.

To summarize, the generalizations about CV reduplicants that need to be accounted for are as follows: (i) it is a prefix, (ii) its size (one syllable), (iii) its shape (CV and not CVC), and (iv) it always contains the same vowel as its base. In Squamish, the **same** constraints that derive CVC reduplicants also derive CV **reduplicants,** with the addition of another markedness **constraint** Given the claim that CV reduplicants are also **roots** and will thus **be** subject to constraints on roots, the Squamish grammar must state explicitly that they are roots:

(28)	*Morpheme*	*Shape*
	RED_2	Morphological Category (MCat)=Root

Thus, constraints on roots will evaluate both CVC and CV **reduplicants.** We can now provide a unified account of the size of both reduplicants. The fact that CV

reduplicants differ from roots in that they have a different shape, can be explained as an emergence-of-the-unmarked effect.

CV reduplicants, like CVC reduplicants, are prefixes, are always a syllable and show root-like properties. Thus, they are subject to the alignment constraint in (14) above and the template in (16) above. However, these two constraints alone are not enough to derive the CV reduplicant.

CV reduplicants, like CVC reduplicants are subject to a faithfulness constraint that requires the reduplicant to copy as much of the base as possible. This constraint is specific to CV (RED_2) reduplicants and is ranked separately from the same constraint that is specific to CVC (RED_1) reduplicants (cf. 17 above):

(29) MAX-BR-RED_2
Every segment in the base has a correspondent in RED_2.

Cross-linguistically, syllables prefer to be open. Squamish exhibits this preference in CV reduplicants. Thus, unlike CVC reduplicants, we must ensure that CV reduplicants surface without a coda by invoking a markedness constraint that bans them:

(30) NO CODA
*$C]_\sigma$ Syllables are open

As with CVC reduplicants in Squamish, it is more important that reduplicants be monosyllabic than it is for the reduplicant to be identical to its base. As a result, ROOT=σ is crucially ranked above MAX-BR-RED_2. Furthermore, it is more important that the CV reduplicant is open than it is for the CV reduplicant to copy as much of the base as possible. As a result, NO CODA is crucially ranked above MAX-BR-RED_2:

(31) *Root=σ* >> *MAX-BR-RED_2* and *NO CODA* >> *MAX-BR-RED_2*

/RED_2 – t'ajaq / 'angry'	ROOT=σ	NO CODA	MAX-BR RED_2
☞ a. t'a-t'ajaq	*	*	***
b. t'aj-t'ajaq	*	**!	**
c. t'ajaq-t'ajaq	**!	**	

In this ranking we observe the emergence-of-the-unmarked effect whereby **CV** reduplicants look less like roots in that they have a different shape.

Unlike **CVC** reduplicants that always contain a default schwa, **CV** reduplicants always contain the same vowel as their base. Again, we need to invoke an identity constraint that evaluates vowel place features, but is specific to **CV** (RED_2) reduplicants. This IDENT constraint is ranked separately from the same constraint that is specific to **CVC(RED,)** reduplicants (cf. 19 above):

(32) IDENT-BR[VF]- RED_2
Every feature in the base must have a correspondent in RED_2

In **Squamish,** it is more important for **CV** reduplicants to have identical vowel place features than it is for **CV** reduplicants to avoid marked vowels. This is the opposite tendency observed with **CVC** reduplicants (cf. 21 above). For **CV** reduplicants, ***V-PLACE** is crucially ranked above IDENT-BR[VF]-RED_2:

(33) *IDENT-BR[VF]- RED_2 >> *V-PLACE*

/RED_2 – t'ajaq / 'angry'	IDENT-BR [VF]-RED_2	*V-PLACE
☞ a. t'a-t'ajaq		***
b. t'ə-t'ajaq	*!	**

The following is the constraint ranking that accounts for **CV** reduplication:

(34) ROOT=σ >> NO CODA >> MAX-BR-RED_2, IDENT-BR[VF]-RED_2 >> *V-PLACE

This ranking correctly predicts the optimal output for all cases of **CV** reduplication. The following tableau provides an illustration:

(35) *Monosyllabic root containing a full vowel*

/RED_2 – k'ʷaj' / 'hungry'	ROOT =σ	NO CODA	MAX-BR RED_2	IDENT-BR [VF]-RED_2	*V-PLACE
☞ a. k'ʷa– k'ʷaj'		*	*		**
b. k'ʷə– k'ʷaj'		*	*	*!	*
c. k'ʷaj'– k'ʷaj'		**!			**

The fact that CV reduplicants differ from roots in shape results from the fact that NO CODA is highly ranked in the grammar. This ranking also accounts for CV reduplicants whose bases are monosyllabic roots containing a schwa and for CV reduplication of bisyllabic roots containing schwas in their first syllables and full vowels in their second syllables (for space considerations, the illustrative tableaux are not included here).

In summary, we have seen that CV reduplicants, like CVC reduplicants, are analyzed as roots and how the same constraints that derive the size, shape and segmentism of CVC reduplicants also derive the size, shape and segmentism of CV reduplicants (with the addition of another markedness constraint, NO CODA). The next sub-section illustrates the way in which this constraint ranking captures the fact that reduplicants are also different from roots through a discussion of the emergence-of-the-unmarked effect that is observed.

4 The Emergence-of-the-Unmarked

In the emergence-of-the-unmarked (TETU) ranking (McCarthy and Prince 1994, 1999 Alderete et al. 1999). markedness constraints are ranked below IO-Faithfulness constraints and above BR-Faithfulness constraints:

(36) IO-FAITHFULNESS >> MARKEDNESS >> BR-FAITHFULNESS

This ranking illustrates why reduplicative outputs contain less marked structure than non-reduplicative outputs The effects of the markedness constraints are not visible throughout the language generally since the constraint banning marked material is lower ranked than the constraint ensuring 10–Faithfulness.

In Squamish, the relevant 10–Faithfulness constraints are MAX-I0 and IDENT-IO[VF]. The relevant BR-Faithfulness constraints are MAX-BR and IDENT-BR[VF]. The effect of the TETU ranking is observed with the three markedness constraints active in predicting Squamish reduplicants. I argue that reduplicants are root-like in Squamish, noting that reduplicants are also different from roots. It is the TETU effects that explain why reduplicants are not *perfect* mots.

Roots in Squamish are predominantly monosyllablic (approximately 70%). However, 28% of roots are bisyllabic and thus violate ROOT=σ. Since MAX-10, is ranked above ROOT=σ, non-reduplicative forms are not subject to this

constraint and surface with more marked material that is not ruled out by the markedness constraint. Reduplicants on the other hand are always monosyllabic and always obey ROOT=σ. Since MAX-BR is ranked below ROOT=σ, reduplicants are subject to this constraint and surface with less marked material which is ruled out by the markedness constraint:

(37) MAX-IO >> ROOT=σ >> MAX-BR

The TETU effect is also observed with the *V-PLACEmarkedness constraint. Since Squamish is a language whose vowel system contains vowels other than schwa, this constraint will inevitably be violated throughout the language. However, ranking IDENT-IO[VF] above *V-PLACEand IDENT-BR[VF] below *V-PLACE, marked (non-schwa) vowels in Squamish are predicted to be attested throughout input-output pairs. However, base-reduplicant (crucially, CVC) pairs are predicted to have less marked material (schwa). This is attested in CVC reduplication. Thus, crucially this TETU ranking must make reference to RED,:

(38) IDENT-IO[VF] >> *V-PLACE >> IDENT-BR[VF] -RED,

This ranking explains that while CVC reduplicants are considered root-like in Squamish, the differ from roots featurally and thus are not perfect roots.

Finally, the TETU effect is observed with the NO CODA markedness constraint. The ranking of NO CODA in between MAX-I0 and MAX-BR predicts that non-reduplicated forms which have codas are not ruled out and consequently, non-reduplicated outputs have more marked material than CV reduplicants. This is what is attested in Squamish: 99% of monosyllabic words have codas, 77% of final syllables in bisyllabic words are closed (Dyck 2000). CV reduplicants, on the other hand, never have codas. The relevant TETU ranking must make reference to RED,:

(39) MAX-IO >> NO CODA >> MAX-BR-RED,

This ranking provides an explanation for the fact that while CV reduplicants are also considered root-like in Squamish, they differ from roots in shape and thus are not perfect roots.

5 Summary

The following is a final constraint ranking for both CVC and CV reduplicants:

(40) Root=σ >> Max-BR-RED$_1$ >> No Coda >>
Max-BR-RED$_2$, Ident-BR[vf]-RED$_2$ >> *V-Place >> Ident-BR[vf]-RED$_1$

The following tableau is an illustration of how this ranking predicts the correct output for CVC (RED$_1$) reduplicants:

(41) *RED$_1$ + bisyllabic base with two full vowels*

/RED$_1$ - k^{w}opits/ 'elder siblings'	Rt =σ	Max BR RED$_1$	No Coda	Max BR RED$_2$	Id-BR [vf] RED$_2$	*V-Place	Id-BR [vf] RED$_1$
☞ a. k^{w}ap-k^{w}opits	*	**	**			**	*
b. k^{w}op-k^{w}opits	*	**	**			***!	
c. k^{w}a-k^{w}opits	*	***!	*			**	*
d. k^{w}o-k^{w}opits	*	***!	*			***	
e. k^{w}opits-k^{w}opits	**!		**			****	

The following tableau is an illustration of how this ranking predicts the correct output for CV (RED$_2$) reduplicants:

(42) *RED$_2$ + bisyllabic base with schwa in the first syllable, full vowel in the second*

/ʔɔs - RED$_2$ - tʃɔw'at/ 'clever'	Rt =σ	Max BR RED$_1$	No Coda	Max BR RED$_2$	Id-BR [vf] RED$_2$	*V-Place	Id-BR [vf] RED$_1$
☞ a. ʔɔs-tʃə-tʃaw'at	*		*	***		*	
b. ʔas-tʃɔw'-tʃaw'at	*		**!	**		*	
c. ʔɔs-tʃə-tʃaw'at	*		*	***	*!	**	
d. ʔɔs-tʃaw'-tʃaw'at	*		**!	**	*	**	
e. ʔɔs-tʃaw'at-tʃaw'at	**!		**			**	

Although RED$_1$ and RED$_2$ have different shapes and segmental content, both reduplicants are subject to the same template requiring roots to be monosyllabic

(ROOT=σ). This constraint is in competition with the constraints that require reduplicants to copy as much of their bases as possible (MAX-BR). Thus, ROOT=σ must be ranked above both MAX-BR constraints:

(43) ROOT=σ >> MAX-BR-RED$_1$, MAX-BR-RED$_2$

To ensure that the shape of RED, is CVC and that the shape of RED, is CV, the prosodic markedness constraint banning codas must be ranked above the constraint requiring **RED,** to be segmentally identical to its base, and below the constraint requiring RED$_1$ to be segmentally identical to its base:

(44) MAX-BR (RED$_1$) >> NO CODA >> MAX-BR-RED$_2$

To ensure that the vowel of **RED,** is a copy of the root and that the vowel of RED, is always a schwa, the **constraint** banning full vowels must be ranked above the constraint requiring RED, to be featurally identical to its base, and below the constraint requiring RED$_1$ to be **featurally** identical to its base:

(45) IDENT-BR[VF]-RED$_2$ >> *V-PLACE >> IDENT-BR[VF]-RED$_1$

6 Conclusions and Theoretical Implications

This paper has argued that both CVC and CV reduplicants in Squamish are **roots,** allowing us to provide a unified **account** of the two reduplicants. Both CVC and CV reduplicants are categorized as **roots** in the Squamish grammar and are thus subject to constraints in the grammar that make reference to roots. This paper demonstrates that the shape, size and segmental content of Squamish reduplicants can be derived within Optimality Theory. Optimal candidates are selected through the interaction of three types of constraints: (i) BR-Faithfulness constraints on segments (MAX-BR[SEGMENT]) and features (IDENT-BR[VF]) that are specific to the individual **reduplicant** types CVC **(RED,)** and CV (RED$_2$), (ii) Prosodic Markedness constraints on segments (NO CODA) and features (*V-PLACE) and (iii) a generalized prosodic template (ROOT=σ).

Both reduplicants in Squamish, however, are not perfect roots: (i) CVC reduplicants differ from the root **featurally** by having a fixed schwa (ii) CV

reduplicants differ from the root segmentally by lacking a coda This is explained by the emergence-of-the-unmarked (TETU) effects observed with all three markedness constraints that are active in deriving reduplicants.

This analysis extends Urbanczyk's (1996) proposal that reduplicants can be roots or affixes in showing that more than one reduplicant can have root status in a given language. Furthermore, the root/affix asymmetry in the reduplicative domain does not surface in Squamish even though a smaller reduplicant (CV) does surface and is predicted to have the morphological status of an affix.

Finally, this paper illustrates that there is a distinction in Squamish between the Prosodic Stem, where stress is assigned, and the Prosodic Word. This supports claims for a sub-lexical hierarchy in which the Prosodic Word contains internal constituency (Czykowska-Higgins 1998, Downing 1999 among others).

Appendix: Key to Squamish Orthography

Ortho.	IPA	Ortho.	IPA	Ortho.	IPA	Ortho.	IPA
p	p	n	n	kw	k^w	h	h
p'	p'	ch	tʃ	kw'	k'^w	w	w
m	m	ch'	tʃ'	xw	x^w	y	j
m'	m'	sh	ʃ	k	q	y'	j'
l	l	lh	ɬ	k'	q'	e	ə
t'	t'	tl'	tɬ'	kw	q^w	i	i, e, ɛ
ts	ts	l	l	kw'	q'^w	u	u, o, ɔ
ts'	ts'	k	k	x	χ	a	a
s	s	k'	k'	xw	$χ^w$	ʔ	ʔ

Notes

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[1] Squamish is a Coast Salish language spoken in and around Vancouver, British Columbia. There are less than twenty fluent native speakers remaining. Data in this paper stems from both the Squamish Grammar (Kuipers 1967) and original fieldwork and is presented in both the Squamish Nation orthography (see Appendix for key) and the IPA (in square brackets).

[2] Kuipers (1967) labels CVC reduplication "total" and CV reduplication "partial". I do not adopt the label "total" since it is only *total* when the base is a single syllable and there are many cases where the base is larger than one syllable. Kuipers describes other types of reduplication that are rare or infrequent As it is not yet clear how to treat these patterns. I do not discuss them in this paper.

[3] I label the two reduplicants by their form and not their meaning as it is not yet clear how their meanings can be characterized. Squamish differs from other Salish languages where different reduplicant shapes have more consistent meanings (Urbanczyk 1996 on Lushootseed (Coast Salish)).

[4] See Shaw et al. (1999) for a proposal that Squamish exhibits *quality* sensitivity.

[5] These data are morphologically complex forms that have become frozen. but I assume them to be representativeof the stress pattern.

[6] See Bar-el and Watt (2000) and references therein for further discussion of these, and other stress patterns in Squamish, as well as a discussion on word-internal constituency in Squamish.

[7] Although DEP is active in the grammar as well, it is not crucially ranked with respect to MAX. Thus, for expository purposes, the remaining tableaux in this paper do not represent DEP constraints

[8] Gick (p.c.) argues that English schwa has pharyngeal features. Until a phonetic examination of Squamish schwa is available. I assume that in Squamish it lacks any features. See also Shaw (1996) for a discussion on schwa being weightless.

[9] In this type of identity a segment is taken to be representative of its feature (or bundle of features). in this analysis, vowel place features. I use the IDENTITY constraint for simplicity of exposition.. though the data could be captured by using MAX/DEP feature constraints instead.

[10] Although it cannot be shown that ROOT=σ is crucially ranked above *V-PLACE, it is never the case that a candidate with two violations of ROOT=σ is the optimal candidate (assuming that trisyllabic bases are morphologically complex and thus reducible to bisyllabic or monosyllabic roots), whereas the optimal candidate can violate the *V-PLACE any number of times. In the remaining tableaux of this paper I represent ROOT=σ as crucially ranked above *V-PLACE.

References

Alderete, John, Jill Beckman, Laura Benua, Amalia Gnanadesikan, John McCarthy and Suzanne Urbanczyk. 1999. "Reduplication with Fixed Segmentism", *Linguistic Inquiry*, 30:327-364.

Bar-el, Leora and Linda T. Watt. 2000. Word-Internal Constituency in Skwxwú7mesh (Squamish Salish). Paper presented at the *5th Workshop on Structure and Constituency in the Languages of the* Americas, Toronto, University of Toronto.

Clements, G.N. and Elizabeth Hume. 1995. The internal organization of speech sounds. John Goldsmith (ed), *The handbook of phonological theory*. Oxford: Blackwell. 245-307.

Czaykowska-Higgins, Ewa. 1998. The Morphological and Phonological Constituent Structure of Words in Moses-Columbia Salish (Nxa?anxcín). Czaykowska-Higgins

& Kinkade (eds), *Salish Languages and Linguistics: Theoretical and descriptive perspectives.* Berlin: Mounton de Gruyter. 153-195.

Downing, Laura. 1999. Prosodic Stem ≠ Prosodic Word in Bantu Hall & Kleinhenz (eds) *Current Issues in Linguistic Theory: Studies on the Phonological Word.* Amsterdam: John Benjamins. 74-98.

Dyck, Ruth A. 2000. Stress and Syllable Structure in Squamish. Ms., University of Victoria.

Halle, M. and KP. Mohanan. 1985. Phonology 2. New York: Cambridge University Press.

Kuipers, Aert H. 1967. The *Squamish Language: Grammar, Texts, Dictionary.* The *Hague:* Mouton and Co.

McCarthy, John & Alan Prince. 1999. Faithfulness and identity in Prosodic Morphology. René Kager, Harry can der Hulst and Wim Zonneveld (eds), *The Prosody-Morphology Interface.* Cambridge: *Cambridge* University Press. 218-309.

McCarthy, John & Alan Prince. 1994. The emergence of the unmarked: Optimality in prosodic morphology. *Proceedings of the North East Linguistics Society,* 24:333-379.

McCarthy, John & Alan Prince. 1993. Generalized Alignment. Geert Booij & Jaap van Marle, (eds), Yearbook *of Morphology.* Dordecht: Kluwer, 79-153.

Nakamura, Yumiko. 2000. "Secwepemctsin (Shuswap) Reduplication'', *UBC Working Papers in Linguistics, 3: 35th International Conference on Salish and Neighbouring Languages, 3:* 171-184.

Prince. Alan and Paul Smolensky. 1993. Optimality Theory: Constraint interaction in generative *grammar.* Ms., Rutgers University. New Brunswick and University of Colorado, Boulder.

Shaw, Patricia. 1996. Non-Nuclear Status of Syllabic Obstruents in Berber. Paper presented at the *Linguistic Institute of America,* January.

Shaw, Patricia. Susan Blake, Jill Campbell and Cody Shepherd 1999. "Stress in Musqueam Salish''. *UBC Working Papers in Linguistics, 2:* 131-163.

Spaelti, Philip 1997. Dimensions of variation in multi-pattern reduplication. Doctoral dissertation, University of California, Santa Cruz.

Urbanczyk, Suzanne C. 1996. Patterns of reduplication in Lushootseed. Doctoral dissertation, University of Massachusetts, Amherst.

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Peripheral and Clause-internal Complementizers in Bangla: A Case for Remnant Movement*

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The purpose of this paper is to show that the notion of what is not a Phase is equally important as the notion of what constitutes a Phase. Since the notion of a Phase is'one particular (albeit an emphatic) instance of the notion of constituency, a non-Phase or an incomplete Phase is predicted to be a non-constituent. This paper looks at a curious geometrical puzzle involving clauses with internal Comps in Bangla (=Bengali) and show that such clauses are incomplete phases. In particular, it is shown that the C and its complement are not merged in sequence, nor can they be spelled out as a Phase during the course of the derivation. The claim that the C and its complement do not form a constituent challenges the familiar notion of constituency by showing that an internal C has a non-linear relation to what has been traditionally considered to be its complement.

This challenge is inspired by Kayne's (1998a,b, 1999) demonstration that P-Comps do not form constituents with their complements. Although Kayne's algorithm accounts for a set of unresolved problems involving P-Comps in Romance, it has not yet been tested for Cs in general. This algorithm, if followed verbatim, is shown to derive the unmarked order of constituents but fails to derive the puzzling C-internal order in Bangla. Another goal of this paper therefore is to present a revised Kaynean algorithm, which, by way of solving the puzzle, is shown to provide crucial evidence for derivation by Phase (Uriagereka 1997, Chomsky 1999). This is a particularly welcome result as it brings two different research strands together.

The implicit claim of the overall analysis is that consistent leftward XP movement derives various surface orders in verb-final languages (Bhattacharya 1998 et seq).

1 The Puzzle itself

In the unmarked case, the complement clause is postverbal and the Comp is in the initial periphery in Bangla, exactly as in English: .

(1) John jane [je ma kal rate oSudh kheyeche][1]
John knows [that mother last night.LOC medicine ate]
'John knows that mother took medicine last night'

However, if the complement clause is moved to a pre-verbal position (from its Nachfeld, which is the post-verbal position for finite clauses in this language), then curiously the Comp can no longer remain in the initial position of the complement clause:

(2) John [ma je kal rate oSudh kheyeche] jane
John [mother that last night.LOC medicine ate] knows

If the complement were to precede the subject, the same configuration obtains:

(3) [ma je kal rate oSudh kheyeche] John jaṇe

If for some speakers (2) is preferable over (3), this is because specific subjects in Bangla seem to behave like left dislocated subjects (Bhattacharya 2000b, Simpson & Bhattacharya 2001). By all accounts though, the fact that whenever the complement CP moves the C .cannot remain in the initial position is a puzzling phenomenon, one that is not readily attested in the world's languages.[2]

2 A Naive "Disturbed Move" account

A descriptive, therefore naïve, account of the data above leads to two distinct possibilities listed below as options A and B.

(A) Movement induced by "disturbance", i.e., if something within the complement is re-arranged then the clause as a whole must also move.

This option is supported by data such as follows which show that if the complement were to remain in the canonical postverbal position, the C cannot be non-initial:

(4)a. *amra jantam [ma je aSbe]
we knew mother that come.will
'We knew that mother will come'

b. *John dekhlo [Robin je khacche]
John saw Robin that eating
'John saw that Robin is eating'

c. *John bhablo [Sue hEmleT je poReche]
John thought Sue Hamlet that read
'John thought that Sue has read Hamlet'

(B) Since the clause must move the Comp cannot remain in the initial position.

The data supporting this option is as follows, which shows that if the complement is in a preverbal position, the C within that complement cannot be in the initial position:

(5) a. *amra [je ma aSbe] jantam
b. *John [je Robin khacche] dekhlo
c. *John [je Sue hEmleT poReche] bhablo

These two options are configurationally represented as follows:

(6)a. V + *[$_{CP}$ ...C...]
b. *[$_{CP}$ C...] + V

Judging by the supporting data above, it might seem that options (A) and (B) are variants of each other, however; as I shall point out in section 4, there is a real difference here.

3 A Question of Typology

The geometry of the phenomenon that we have witnessed so far raises the following question:

(7) Why must an initial element move inside a clause XP to enable that clause to move inside another clause YP?

This question, in spirit, is actually quite similar to a Greenbergian universal such as the following:

(8) If a language is comp-final, the language is OV.

This universal implies that the internal order within the CP (C-finality) is keyed in to the internal order within the VP (V-finality) and that precisely is the phenomenon we are dealing with. In other words, (7) and (8) are saying the same thing. 'The puzzle' therefore seems to be related to broader issues.

Pre-empting the analysis somewhat at this stage, it may be pointed out that the typological similarity of our question in (7) to a Greenbergian universal has no theoretical importance in the analysis advanced since the question of head-finality has no place in an analysis based first on the LCA and second, on the notion that C and its complement do not actually form a constituent.

4 Phase

A word or two about the notion of PHASE that has already come to occupy an important place in syntactic theorization will set the relevance of the analysis proffered here. The genesis of the concept lies in the importance of derivationality as a crucial algorithm in the way syntax has come to be seen to proceed. This, in return, led to the concern for reduction of complexity since Chomsky (1998) but anticipated since at least Uriagereka (1997). In the latter's work, the idea of Multiple Spell-Out (MSO) appeals to a Dynamically Split Model in which a derivation spells out different chunks of structures in steps. Once a particular unit is spelled out to an intermediate PF (and LF) sequence, it is no longer possible to access its internal constituent structure. It can nonetheless participate in further Merge but only as an inaccessible whole unit. This model therefore provides a reduction of the derivational workspace in the true sense. In Chomsky's formulations, a natural syntactic object is loosely defined as the syntactic equivalent of a proposition in the "meaning side". This corresponds to either a full clause or a verb phrase with all theta-roles assigned, i.e., a CP or a *v*P. Chomsky calls this unit a PHASE and proposes the following cyclicity condition:

(9) The head of a PHASE is "inert" after the PHASE is completed, triggering no further operations. (Chomsky 1998:20)

This, and the MSO model, virtually ensures that fragments of syntactic objects are inaccessible once the computation is locally complete. In Uriagereka (1997, 1999), this is shown via the classic CED case in (10).

(10)a. [who did you see [a critic of t]]
b. *[who did [[a'critic of t] see you]]

Since subjects constitute one single derivational space, extraction out of it is impossible once it derivationally spelled out.

In Chomsky (1998) it is suggested that one of the empirical basis for the concept of Phase is that Phases seem to have a degree of phonetic independence[3]. In this connection, one renowned test is the Nuclear Stress Rule (NSR) of Bresnan (1972). For Bresnan, the domains of application for the NSR are **S** and NP. In view of the current notion, NSR can be argued to be applicable at the level of the verb phrase. Consider (11).

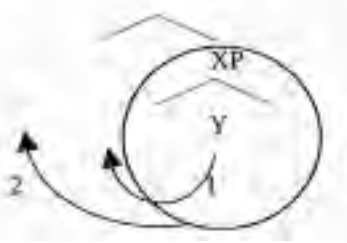
(11)a. The parable shows what (suffering men) can create.
1

b. The parable shows (what suffering) men can create.
1

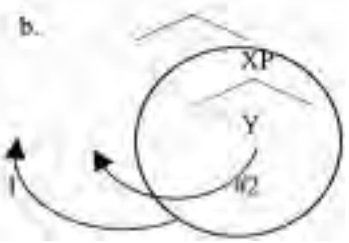
In (11a), ***what*** is the object of the embedded verb ***create.*** Bresnan shows that indefinites like ***what*** cannot bear primary phrasal stress even when final in the verb phrase. Instead, the primary stress is assigned to the rightmost element which can bear the stress, the verb ***create.*** In (11b) the object of the embedded verb is ***what sufering*** where ***suffering*** is assigned the primary stress. When the wh-phrase is moved to [Spec,CP] on the subsequent phase, ***sufering*** carries its primary stress with it. NSR therefore seems to treat the vP as a domain of operation, i.e. a phase.

A return now to the two options introduced in section 2 will reveal that option B involves a violation of the impenetrability of a Phase implied in (9) above, This is so because the second movement in (12b), representing option B, takes place after the XP has been spelled out.

(12)a.



b.



5 Tuck-in and Remnant Movement

The question (7) raised in section **3,** has a theoretical answer. First, the question itself can be translated as follows (ignoring the matrix subject position):

(13) V [a [b c]] ⇒ [b [a c]] V

I.e., the relative (precedence) order of the Comp a and the embedded subject b is reversed when the complement moves out of the postverbal position. Fortunately, a combination of available syntactic operations allow this geometry to be derived theoretically. In Bhattacharya (2001), it is briefly shown that, if ***Tuck-in*** is enforced on Remnant Movement, the combination will have the desired effect of inverting the precedence relation between the two elements a and b. First, a few words about these operations.

5.1.1 Tuck-in

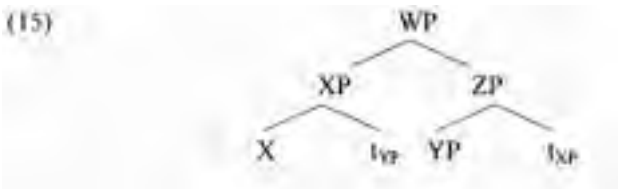
Tuck-in as in *(14)* is derived from Richards' **(1997)** study of multiple Wh fronting in Balkan languages who proposes that the Whs must involve crossing rather than nesting paths in their movement to multiple specifiers of a single head.

(14) ***Tuck-in***[4]
Later XP movement targets inner specifiers, i.e., they tuck in.

5.1.2 Remnant Movement (RM)

This operation involves movement of a category which includes the remnant trace of another category. Therefore in the following, first, YP moves out of XP to the Spec of ZP leaving a trace t_{YP}. Then XP which contains this remnant trace moves out of ZP to the Spec of WP.

(15)



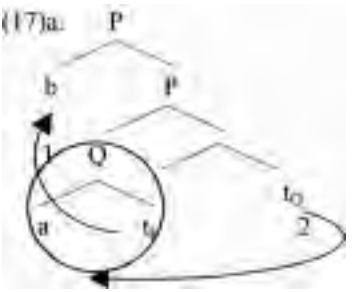
RM or Incomplete Category Fronting is exhibited by the following in German where the pre-V2 participle includes a trace of the direct object:

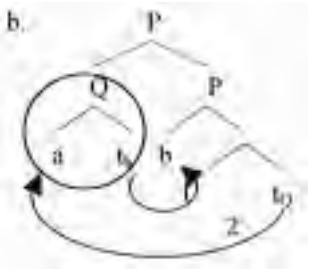
(16) [$_{VP}$ t_i Gelesen]$_j$ hat [$_{IP}$ keiner [$_{IP}$ das Buch]$_i$ t_j]]
read **has** no-one the book **(Müller** 1998)

5.1.3 A combination of Tuck-in and Remnant Movement

If we now enforce ***Tuck-in*** on RM then the desired goal of inverting the order between a and b in (13) is achieved. In (17b), where move 2 involves RM violates ***Tuck-in*** since Q (which includes the trace of b) moves to an outer spec of P whereas in the case of (17a) the movement of Q is to the

inner spec of P according to the condition in (14). The effect, as can be readily observed, is that in the latter case the precedence order of a and b is reversed, as desired.





In terms of real data, following the above derivation, the puzzling order of (2) (a shorter version of that example) can be now derived as follows:

(18)a. V_{matrix} [$_{CP}$ *je* (*ma* *aSbe*)]
that mother come.will

b. *ma* V_{matrix} [$_{CP}$ *je* (t_{ma} *aSbe*)]

c. *ma* [$_{CP}$ *je* (t_{ma} *aSbe*)] V_{matrix} t_{CP}
RM by Tuck-in

The step in (18c) pertains to the combination of the two operations. After the movement of the embedded subject ma out of the CP to an outer spec position, the CP with the remnant trace moves to an inner spec position respecting Tuck-in. Let us call this the pied piped solution (since the CP pied pipes after the embedded subject moves out).

There are some problems with this solution. First, the set of movement in steps b and c are unmotivated. Secondly, pied piping of the CP in step c is still a descriptive account (as any pied piping account is) and finally, the extraction of the subject from the CP violates derivation by Phase.

6 Topicalization

Question (7) also has an empirical answer which has to do with the fact undisclosed so far that examples like (2) actually have a topicalized meaning. This is clear from the following example:

(19) John [ma je **kal aSbe**] jane
John mother that tomorrow come.will knows
'As for the fact that mother will come tomorrow, John knows it'

Since topicalization is a root phenomenon, this partly explains why the complement must move up. A part of the derivation in (18) therefore can be rescued by appealing to the fact that it is 'mother' which really carries the topic feature and that Pied Piping results in a topicalized meaning of the whole complement when it is moved to a pre-verbal position. However, the other problems remain unaddressed.

7 Kayne's Algorithm

A more interesting solution may be advanced if we consider Kayne's (1998a,b, 1999) radical idea, briefly reviewed below, that the C and its complement does not form a constituent. Kayne demonstrates this via the P-Comp di in (20). The P-Comp in this model does not form a constituent with 'the infinitival complement IP *cantare*.

(20) Gianni ha tentato di *cantare*
John has tried to sing-INF

Rather, the derivation proceeds as follows:

(21)a. Merge matrix V with IP: *tentato* + *cantare*
b. Merge Comp with (a): di + {tentato, *cantare*}
c. Comp attracts IP to its Spec: *cantare*, di {tentato, t_{IP}}
d. A new head W is merged and C adjoins to it:
di+W {cantare, t_{di} (tentato, t_{IP}}}
e. Comp(+W) attracts remnant VP to [Spec,W]:
{tentato, t_{IP}}, *di*+W{cantare, t_{di} t_{VP}}

The step in (21b) crucially implies that di and *cantare* do not form a constituent. Kayne addresses a good many unresolved problems in Romance syntax by letting the derivation proceed in this manner. I direct the reader to the original sources for details. For more immediate concerns, let us see if this algorithm holds water for the problem at hand.

7.1 Je as an attractor

By following the algorithm verbatim, we predict and derive the base order of complements in Bangla, i.e., the order in (1) or (22):

(22) John jane [je ma aSbe]
John knows that mother come.will

(23)a. Merge V_{matrix} with complement IP: $\{_{VP}$ jane, $\{_{IP}$ ma, *aSbe*$\}\}$
b. Merge the Comp with (a): $\{je, \{jane, \{_{IP}\ ma, aSbe\}\}\}$
c. Comp attracts IP: $\{_{IP}\ ma, aSbe\}\{je, \{_{VP} jane, t_{IP}\}\}\}$
d. C to a higher head: $\{je, \{_{IP} ma, aSbe\}\{t_{COMP}, \{_{VP} jane, t_{IP}\}\}\}\}$
e. C attracts VP: $\{_{VP} jane, t_{IP}\}\{je, \{_{IP}\ ma, aSbe\}\{t_{COMP}, t_{VP}, t_{IP}\}\}\}$

Aditionally due to step d, the algorithm also predicts the following:

(24) *John [ma aSbe je] jane

However, it cannot derive the crucial order of (2) and some other orders that I do not discuss here.

7.2 A Revised Kaynean Model

One way to apply this algorithm to our case is by proceeding as follows:

(25)a. $[_{VP}$ V $\{_{IP}$ Sub VP$\}\}$
b. $[C, \{V, \{_{IP}$ Sub VP$\}\}]$
c. $\{VP, [C, \{V, \{_{IP}$ Sub $t_{VP}\}\}\}\}$
d. $[C, \{VP, [t_C, \{V, \{_{IP}$ Sub $t_{VP}\}\}\}]\}]$
e. $[\{_{IP}$ Sub $t_{VP}\}, \{C, \{VP, [t_C, \{V, t_{IP}\}\}]\}]$

I.e., instead of the IP, the lower VP is attracted in step c and in the last step the remnant IP is attracted. In terms of actual data, the derivation proceeds as follows:

(26)a. *je* V_{matrix} $[_{IP}$ *ma* $[_{VP}$ *aSbe*$]]$ →
b. *aSbe* je V_{matrix} $[_{IP}$ ma $t_{VP}]]$ →
c. *je* $[$ *aSbe* $[$ t_{IP} V_{matrix} $[_{IP}$ *ma* $t_{VP}]]]$ →
d. $[_{IP}$ ma $t_{VP}]$ je *aSbe* t_{je} V_{matrix} t_{IP}

However, some of the problems with the pied piping solution remain here because no motivation has yet been given for the various movement.

7.3 Comp as a Contrast marker

The C-internal clauses in addition to the topicalized meaning seem to set up some kind of contrast[5] with the remainder of the complement as well (i.e. the complement without the subject), especially in cases of longer complements:

(27) John [ma je kal rat-e phOl kheyeche] janto
John mother that last night-LOC fruit eaten knew
a. 'As for the fact that mother ate fruit last night, John knew it'
b. 'As for the fact that mother ate fruit (and not drink wine) last night, John knew it'

This tantarnounts to the observation that at the same time as the whole complement is topicalized, part of it gets a contrastive meaning. The VP attraction is (26a) is thus justified as triggered by the need to check a focus-like feature of contrast.

Secondly, perception and intonation experiments show that speakers identify and produce the same intonation contour for both contrastive topic and focus. Speaker B has produced 4 contrasts which all have similar vertical excursions on the pitch accent.

(28)A: Vaši deti u2e vzroslye?
'Are your children already adults?'
B: Počti, Andrej učitsja v universitete, a Vova v gimnazii
'Almost, Andrej studies at university but Vova at high school'
(Mehlhorn, in preparation)

I.e., at some level topic and focus seem to be related to a more general notion of contrast. Syntactically, a clearer proof of this obtains in Bangla where the particle ***je*** can induce a clefted meaning (italicised in the translation) as well whenever it is not in the second position in these C-internal clauses:

(29) John [ma phOl je kheyeche] janto
John mother fruit that eaten knew
'As for the fact that *it was a fruit* that mother ate, John knew it'

This roughly indicates that ***je*** can carry a general feature of contrast at some level of derivation which subsumes both a topic and a focus feature. This probability can now be used to account for the movement of C, left unmotivated in Kayne's original algorithm, in step (26b) above. This head movement is based on the need for the C to release its topic-like contrast feature in the next step. The last remaining movement, that of the remnant IP in step (26c) is for checking the overall Topic or a Ground feature (i.e. whatever remains after taking out Focus, Vallduví 1992) against the recently moved C head.

This account thus does not rely upon a descriptive mechanism like Pied Piping and it accounts for the fact that the whole complement, and not the subject alone, gets a topicalized meaning.

In addition, this account now provides crucial support for derivation by Phase since the extraction of the embedded VP takes place from a non-phase like IP in step (26a). This possibility, in the first place, is created because in the Kanynean algorithm there is no embedded CP to begin with. If there had been an embedded CP, extraction out of it would .violate the Phase impenetrability condition. A surprising result of this way of deriving the puzzling order therefore is that Kayne's algorithm, proposed independently of Chomsky's derivation by Phase, provides evidence for the latter.

8 Final Peripheral Comp

'Finally, I provide confirmation of the analysis presented from final peripheral Comp cases. Bangla typically employs clause final C bole (a form of verb 'to say') also:

(30) amra [ma kal aSbe bole] jani
we [mother tomorrow come.will C] know
'We know that mother will come tomorrow'

The complement cannot, in this case, be in a postverbal position. Notice that no topicalized meaning obtains in this case although the complement is in a preverbal postion.

Bole is used as a causal marker elsewhere in the language:

(31)a. mollika aSbe bole, anondo murgi reMdheche
Mollika come.will because Anondo chicken cooked .
b. robbar bole, dokan bOndho
Sunday because shop closed

I will therefore assume that a version of a causal feature is carried over when bole is used as a Comp. However, there is no feature of contrast involved with this Comp. Unlike j e therefore, bole can allow at most one movement across it since it has only one feature. This prediction is borne out. The derivation for (30) proceeds as follows:

(32) bole V_{matrix} [$_{IP}$ ma ($_{VP}$ *kal aSbe*))] → ma *kal aSbe* bole V_{matrix} t_{IP}

Next, unlike in the Kaynean model, the C does not obligatory head move in this case. This is due to the fact that *bole* unlike ***je*** does not contain one or more features of contrast and can only attract the whole IP once to its spec. This suggests that in this case at least a Kayne-like IP attraction for the second step will do the job.

The assertion that ***bole*** does not carry any feature of contrast can be easily verified from the ungrammaticality of the following:

(33) *amra [ma bole aSbe] jani
we mother C come.will know

I.e., *bole* must always be clause final.

Notes

* Thanks to audiences at WECOL 2000, Fresno, at CIEFL, Hyderabad, and at Großbothen for questions and comments on presentations based on a version of this paper. I also wish to thank Richard Kayne, Norvin Richards and Juan Uriagereka for discussions on the problem at length

[1] Transcription key: T D R = retroflex ʈ ɖ ɽ; S = palato-alveolar ʃ; E O = mid vowels æ ɔ

[2] Though see Bayer (1984) who discusses data like (i) in the Bavarian dialect of German:

(i) [$_{XP}$ Da Xaver daß an Mantl kafft hot] hot neamad glaubt
the Xaver that a coat bought has, has nobody believed

However, as Bayer points out this possibility is allowed in Bavarian as opposed to standard German because the former's disrespect for the Doubly-filled-Comp filter. I.e., the complement XP is assumed to have moved to the [Spec,CP] position in (i) Bayer's concern therefore is not the position of the C within the complement but with that of the whole complement itself and of the discovery that although other cases of doubly filled Comps in Bavarian (e.g., (ii) below) allow the complement to be at the *Nachfetd* position, XPs of the type in (i), do not.

(ii) I woaß ned [$_{XP}$ wer daß des doa hot]
I know not who that this done has

Note that this is simply not possible in Bangla where, if the complement were to remain at the *Nachfeld,* it must have the C in the initial position:

(iii) *ami jani na [ke je eTa koreche]
I know not who that this done

So, though the Bavarian data reported in (i) is superficially similar to the data in Bangla, their relation to postverbal complements in general are different and the interesting fact of the puzzling position of the C inside the complement CP in (i) (same as in Bangla) remains to be analysed. It may also be pointed out that Bavarian (i) above is more like (3) in the text, and not (2), which is the marked case for Bangla.

[3] It is also suggested that Phases are reconstruction sites which is why reconstruction takes place to an A-movement trace position rather than to a PRO-site (see (ia)). The phonetic independence issue is also related to the observation that control cases as opposed to raising cases pattern with CPs in being phonetically isolable (see (ib):

(i) a. [one interpreter each]$_i$ (was assigned t_i *planned PRO, to speak) to the diplomat
b. It is to go home (every evening) that John prefers/*seems

[4] In Bhattacharya (1999, forthcoming), it is shown that *Tuck-in* applies within the DP in Bangla.

[5] Thanks to Probal Dasgupta for judgement on this point.

References

Bayer, Josef. 1984. "COMP in Bavarian syntax", ***The Linguistic Review, 3:*** 209-274

Bhattacharya, Tanmoy. 1998. "DP-internal NP movement", ***University College London Working Papers in Linguistics*** 10: 225-252

Bhattacharya, Tanmoy. 1999. ***The structure of the Bangla DP.*** London: University College London dissertation

Bhattacharya, Tanmoy. 2000a. "In search of the vague 'One'", *ConSOLE* 7, ed. by Tina Cambier-Langeveld, Anikó Lipták, Michael Redford and Erik Jan van der Torre, 33-48. Leiden: SOLE

Bhattacharya, Tanmoy. 2000b. "XP movement in DPs and CPs", Paper presented at the ***The Antisymmetry Workshop,*** Cortona (May)

Bhattacharya, Tanmoy. 2001. "The Puzzle of Bangla Comp-Internal Clauses", ***Snippets*** 3

Bhattacharya, Tanmoy. (forthcoming). "Numeral/ Quantifier-Classifier as a Complex Head", ***Semi-Lexical Heads,*** ed. by Henk van Riemsdijk and Norbert Corver. The Hague: Mouton de Gruyter

Bresnan, Joan. 1972. "On Sentence Stress and Syntactic Transformations", ***Contributions to Generative Phonology,*** ed. by Michael Brame, 73-107. Austin: University of Texas Press

Chomsky, Noam. 1998. "Minimalist Inquiries: The Framework", ***MIT Occasional Papers in Linguistics,*** Cambridge, ***MA:*** MIT

Chomsky, Noam. 1999. "Derivation by Phase", ***MIT Working Papers in Linguistics*** 18, Cambridge, MA: MIT

Kayne, Richard S. 1998a. "Overt vs. Covert Movement", ***Syntax*** 1: 128-191.

Kayne, Richard S. 1998b. "A Note on Prepositions and Complementizers", ***Internet Celebration for Noam Chomsky,*** MIT Press.

Kayne, Richard S. 1999. "Prepositional Complementizers as Attractors", *Probus*, 11: 39-73

Mehlhorn, Grit. (in preparation). ***Empirische Evidenz für die Beschreibung kontrastierter Konstituenten im Russischen,*** Doctoral dissertation, Universität Leipzig

Müller, Gereon. 1998. ***Incomplete Categoty Fronting: A derivational approach to remnant movement in German.*** Dordrecht: Kluwer

Richards, Norvin. 1997. ***What Moves Where When in Which Language?*** Cambridge, MA: MIT dissertation

Simpson, Andrew and Tanmoy Bhattacharya. 2001. "Obligatory ***Wh*** Movement in a ***Wh*** in situ Language", ***NELS*** 30, Amherst: GLSA

Uriagereka, Juan. 1997. "Formal and Substantive Elegance in the Minimalist Program (On the Emergence of Some Linguistic Forms)", ***The Role of Economy Principles in Linguistic Theory,*** ed. by Chris Wilder, Hans-Martin Gaertner and Manfred Bierwisch, 170-204. Berlin: Akademie Verlag

Uriagereka, Juan. 1999. "Multiple Spell-Out", ***Working Minimalism,*** ed. by Norbert Hornstein and Samuel Epstein, Cambridge, MA: MIT Press

Vallduvi, Enric. 1992. ***The Informational Component.*** Garland: New York

Auxiliaries as Heavily Grammaticalized Light Verbs: Evidence from South Asian Languages

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1. Introduction: Antisymmetry

The theoretical impetus for this study stems from the discussion of (anti)symmetry that has occupied some researchers in syntax since Kayne 1994. In its most simplistic form the issue has been whether or not symmetry is a crucial property of languages in general. On the symmetry side of this spectrum Brody (1995) has tried to demonstrate that symmetry is a defining property of languages in form of his Mirror Theory. There are various typological reasons to doubt the symmetry theory. It is surprising that we do not get a mirror image of, for example, (i) Germanic V2 (ii) The fixed order of the verbs in serial verb constructions (iii) Clitic second'. Another example which interests us presently is in the realm of the relative orders of Auxiliary and the verb. The empirical fact that both Aux-V and V-Aux orders are available in languages in general suggests a possible symmetry in word order. However, it has been noticed in typological studies that although adverbs *can* intervene between the Auxiliary and the V in Aux-V languages, they cannot do so in V-Aux languages (shown for Indo Aryan as well as Dravidian, in (1)).

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[1] Pointed out in a lecture entitled "Recent thoughts on Antisymmetry" by Richard Kayne at the *Workshop* on *the Antisymmetry Theory held* at Cortona, Italy in May. 2000.

(1) a. *likh-*aste*-ch-i [Bangla]
write-slowly-AUX-AGR
Intended meaning: 'I am writing slowly'

b. *khaa-*dhire*-chh-i [Oriya]
eat-slowly-AUX-AGR
Intended meaning: 'I am eating slowly'

c. *(ñaan) ezhuti-kkonT-irikk-uka *patukke* aaNə [Mal]
(I) write-PROG-AUX-INF slowly AUX
Intended meaning: 'I am writing slowly'

This typological fact provides support for antisymmetry of syntax. Our study therefore is a footnote to this demonstration of antisymmetry as we believe that it has important consequences for the theory. Furthermore, the actual mechanism that we suggest for the derivation of the verb-Aux order in these languages also follow the Linear Correspondence Axiom of Kayne (1994) and provides a lack of adverb adjunction, albeit with a twist.

The twist refers to the following observation that *can* be derived from the LCA:

(2) "Verb-final" languages prefer XP movement to X movement.

This observation is an extension of the demonstration of a similar principle shown to be applying inside the DP by Bhattacharya (1998 and 1999), who shows that in a so-called V-final language like Bangla (Bengali), NP-movement is preferred to N-movement inside the DP. The derivation of the right order of the V-Aux that we propose below however crucially employs head movement.

Interestingly, in a recent paper, Mahajan (2000) has proposed that all movement is basically XP movement. I.e., he suggests that syntax allows only category movement. On the one hand this surprising conclusion is in direct opposition to the typological finding stated in (2) above, yet on the other, given Cinque's (2000) demonstration that even within the DPs all movement may be XP or roll-up movement, the similarity between the DP and the clause is retained. The problem that needs to be addressed, then, is how LCA can derive both possibilities. The demonstration in this paper that even V-final languages need to involve head movement, especially in cases involving inflectional morphology, casts a doubt on both sets of proposals above, even though such a mixed approach can also be derived from the LCA. It seems therefore that the LCA in its present form is too powerful, a point that has been noted quite early in the literature. Our analysis

though extracts the pervasiveness of leftward movement in "head-final" languages implied in the LCA in spite of the problems pointed out.

2 The Proposal in a nutshell

In investigating the distribution and nature of auxiliaries in four South Asian languages, three of which are Indo-Aryan (Bangla, Hindi and Oriya) and one Dravidian (Malayalam), we come to the conclusion that auxiliaries in these languages are really heavily grammaticalized light verbs. That is, V-Aux is really V-v in SA languages. However, in the spirit of antisymmetry and the Linear Correspondence Axiom, this order is derived from an underlying v-V order, i.e., the light verb forms an outer shell of the verbal extended projection. That is, the Aux as light verb appears as the final element of the verbal complex by virtue of the big V head moving to small v, a standard assumption in minimalism, as in (3).

(3) $[_{vP}\ [_{v'}\ v\ [_{VP}\ V\ NP\ ]]] \Rightarrow NP_i\ [_{vP}\ [_{v'}\ [_{V}\ V_j\ v]]\ [_{VP}\ t_j\ t_i\ ]]]$

3 Previous Work

Previous works on light verbs in SA languages (Hook 1973 and Butt 1998) although agreed that they constitute a verbal compounding or a V-LV complex predicate, respectively, differ as to the semantic content of the light verb.

Hook (1973) considers auxiliaries as a super-type of light verbs or vector verbs. He calls the V-LV sequences as compounding: the main verb is the polar and the light verb a vector. Consider example (4).

(4) mAI ne preziDeNT-ko xat *likh diyaa*
I-ERG president-ACC letterwritegive-PAST
'I wrote a letter to the president.'

The vector *diyaa* 'give' has an aspectual function, expressing completion of an action. He argues that the relation of compound to a simple verb is an aspectual one, with the compound expressing completion of an action. Thus, for Hook, the LV is an aspectual auxiliary.

From another perspective, Jayaseelan (1996) proposes that light verbs in Malayalam have Aux functions.

(5) a. ñaan nin-akka waatil tuRannu tar-aam
I you-DAT door open give-will
'I will open the door for you.'

b. *ñaan waatil tuRannu nin-akka tar-aam
I door open you-DAT give-will
'Opening the door, I will give it to you.'

In examples like (5), tar 'give' indicates a modal like function like 'for someone's benefit'. He considers it as belonging to the same category as the English construction I will call you a *taxi*, where a modal verb is used in English.

We attempt to show that auxiliaries too are light verbs, i.e., Aux = Lv where Lv indicates heavily grammaticalized light verbs. Furthermore, it has also been suggested that there is indeed a deep rooted relation between auxiliaries and Aspect. First. Den Dikken (1995) shows that the copula Aux is often aspectual. In particular, in predicate inversion cases: the theory proposed by den Dikken makes use of an aspectual functional head F to suggest that an incorporation of an Agr like element to this head actually realises on the surface as an auxiliary. Secondly, we will see below that the so-called auxiliaries in Malayalam also carry aspectual information as they can host aspectual morphemes.

Butt (1998), however, distinguishes between LV and Aux. She argues that Aux and Light verbs show distinct behaviour with regard to case-marking, reduplication, word order, and topicalization. Considering from a subcategorization point of view, she argues that a Main Verb has a full argument structure, an LV has an incomplete argument structure, while an Aux has no argument structure.

We believe that these differences that Butt notes do not come in the way of a categorial identification. Also, given that the co-relation between subcategorization and argument structure is considerably weakened in the current framework, much of what is implied by the subcategorization argument above, fails to be relevant. Our study differs from all previous works on this topic firstly by treating auxiliaries also as light verbs (though heavily

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[2] For example in (i) below, the aspectuality involved is that of stativity whereas in (ii) it is ingressive:

(i) the best solution seems *(to be) instant retreat
(ii) the best solution becomes instant retreat

grammaticalized) and by comparing Dravidian with the general IA pattern. In particular, we argue that light verbs participate in the grammaticalization cline of Hopper & Traugott (1993):

(6) full V > (vector verb) > Aux > Clitic > Affix

4 The Data

The copular auxiliary in Bangla is defective and is *(a)ch* Two possible historical derivations are as follows:

(7) a. From √*aas* 'to sit' *or* √*as* 'to *be*'
b. From Old Indo-Aryan √*r,rcch* 'to go'

However, according to Chatterji (1926: 1035), the most satisfactory derivation is as follows:

(8) From the IE root √*es* (=**as* of OIA) with a combination of IE themes <<-*ske*/ -*sko*>>

This combination is found in a number of ancient IE languages: *éskon, éske* (Homeric preterit), *escit* (Old Latin future), *sketar* 'is' *skente* 'are' (Tokharian), Armenian subjunctive *icem*, etc.In modem Bangla/Oriya, the *(a)ch* auxiliary appears as follows:

(9) a. likh-e-ch-i
(10) a. lekh-i-(a)ch-i
write-PERF-AUX-AGR
'(I) have written'

b. likh-ch-i [Bangla]
b. lekh-u-(a)ch-i [Oriya]
write-PROG-AUX-AGR
'(I) am writing'

Other auxiliaries we are not concerned with here are ho, thak, and *raha*. The auxiliaries in Oriya are *ach* and *aT*. They regularly can take Agr features. E.g.

(11) a achi
'be_{exist}-SG'

b. achanti [Oriya]
'be_{exist}-PL'

(12) a. aTe
'be_{equat}-SG'

b. aTanti,
'be_{equat}-PL'

They can have tense features specified:

(13) se raajaa achi/ thilaa [Oriya]
he king is/ was
'he is/was the king.'

In Malayalam, the three auxiliaries are the equative copula *aak*, the existential copula *uL* and *ir*.

(14) a. ezhut-uka aaNə[3]
write-INF AUX
'is writing'

b. ezhuti-yiTT unTə[4]
write-PERF AUX
'has written'

c. ezhuti irunnu
write.CP AUX
'had written'

It is one particular use of the last auxiliary which fancies our attention because it is the only one which can appear after a conjunctive participle (CP) form of the verb. The past tense form is homophonous with the CP and the only auxiliary that can follow is ir sometimes along with other verbal suffixes denoting different aspectual states:

(15) a. ezhuti-kkonT-irunnu
write.CP-PROG-AUX
'kept on writing'

b. awan wann irikk-aam
he come.CP AUX-MOD
'He may have come.'

c. awan paaTTə paaTi-kkonT-irikk-um
he song sing.CP-PROG-AUX-MOD
'He will keep on singing songs.'

We turn to this aspect of the data directly below.

5 The Aspectual Shell

The (b) and (c) examples in (15) above also shows another difference with copulas *uL* and *aak* which do not allow further suffixation. What is of interest is that the CP appears to exist in Bangla/ Oriya as well but has not received much attention in the literature[5]. This is clear from comparing the two sets of data again:

(16) a. ezhuti-yiTT unTə
write.CP-PERF AUX
'has written'

b. ezhuti-kkonT-irunnu [Mal]
write.CP-PROG-AUX
'kept on writing'

[3] aak is realised as aaNə in nonpast
[4] *uL* in non-past
[5] See however, Butt (1998) for Hindi/ Urdu and Bhattacharya (2000) for Bangla

(17) a. likh-e-ch-i
c. lekh-i-(a)ch-i
write-PERF-AUX-AGR
'(I) have written'

b. likh-ch-i [Bangla]
d. lekh-u-(a)ch-i [Oriya]
write-PROG-AUX-AGR
'(I) am writing'

The Auxiliary *ir* itself in contemporary Malayalam has the meaning 'to sit', this being another difference that *can* be attributed to *ir* as opposed to *aak* and *uL*. Compare this observation with the derivation of the Bangla (and similarly Oriya) copula given in (9) and (10) above. The implication is that originally this verbal complex denoted a sequence of an event and a state like {writing) and (being). This is borne out by crucial evidence (shown in (16) and (17)) more or less unnoticed in the literature that the verb stems in both language types are actually made up of the root and a particle, which, unlike the light verb, is not derived from any verbal root. Synchronically, this particle is *–e* or *-O* in Bangla as in (17a,b), *–i* or *–u* in Oriya as m (17c,d). Since the conjunctive participle in Malayalam is homophonous with the past tense form, we consider the past morpheme as performing this function in Malayalam. Due to the affixal nature of these particles, syntactically they translate in terms of functional heads. Since the conjunctive participle denotes completive action, we take it to contribute to the aspectual information of the verbal complex (c.f. (10)). This element, we suggest, thus constitutes an aspectual outer shell of the V:

(18) [$_{AspP}$ [$_{Asp'}$ CPrt] VP]

5.1 Aspectual shells in Malayalam

Malayalam, as we suggest above, tends to use verbal affixes like *–iTT* and *–konT* to indicate aspectuality. The perfective and progressive affixes in Malayalam are derived from verb roots themselves but are fully grammaticalized. The perfective *-iTT* is derived from the verb *iT-uka* 'to put' and the progressive *-konT* from the verb *koLL-uka* 'to take' or 'bear'. However, Bangla/ Oriya lacks an equivalent of this type of aspectual affixes. This difference is captured in our theory by positing a further aspectual shell for Malayalam (see Hany Babu (in prep.) for further details):

(19) [$_{AspP}$ [$_{AspP}$ [$_{Asp'}$ CPrt] VP]]

The difference between the auxiliary *ir* and the other auxiliaries *can* be best captured by suggesting that ir is a head while the others are XP at Spec of AspP.

6 The *v*P Shell

In this section, we suggest that the head of the *v*P-shell, which takes the Aspectual shell as a complement, is the natural place for the copula in these languages. Since the copula is shown to be integrally related to existentiality, our evidence for a *v*P-shell formed by the copula comes from the assumption that existential closure must take place around a *v*P. Kondrashova (19%) suggests that in languages where the be copula is ungrammatical in the present tense (Arabic, Hebrew, Russian, Turkish, etc.), it is inserted as a dummy to support tense or to perform existential closure. Let us elaborate this further comparing Bangla with Russian. In the equative, predicative, generic, locative, be is ungrammatical in these two languages (except in the locative for Bangla). Russian examples are from Kondrashova 1996, the b examples are the Bangla equivalents.

(20) a. **naš učitel'** (*est') Kolja
our teacher is Kolja

b. **amader Sikkoh** Kolja (*ache)

(21) a. Kolja (*est') **durak**
Kolja is fool

b. Kolja **boka** (*ache)

(22) a. **Sobaka** (*est') ***drug*** **čeloveka**
dog is friend person
'a dog is a **friend** of man'

b. kukur **manuSer bondhu** (*ache)
dog man's freind

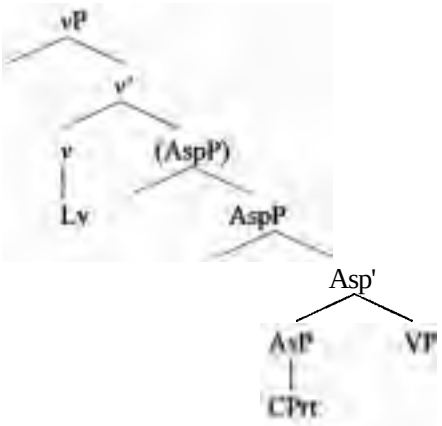
(23) a. Kolja **(*est')** v **Moskve**
Kolja is in Moscow

b. Kolja mosko-y/te (ache)
Kolja Moscow-LOC (is)

In each of these cases for Russian and in Bangla except in the locative, the NPs are either referential, definite or generic and therefore do not introduce an existential operator. So the VP here doesn't need existential closure and thus be is unnecessary. However, if there is an existential meaning, be is inserted even in the present. Otherwise, if the tense is filled, i.e., if it is either past or future, then a dummy be is inserted to support the tense.

The similarity with Russian suggests that in the languages under study a similar phenomenon of existential closure must be taking place. Since existential closure, in the theory of Heim (1981) applies over the VP, and since VP has come to be identified with *v*P, we assume that the place for the copula auxiliary in these languages is located at the head of *v*P.

(24)



With this structure it is now clear that the auxiliary *ir* which is behaves like a head is the very light verb or Lv, the head of *v*P. And given the discussion in this section the Bangla/Oriya auxiliary -ch also occupies the same position.

Since the Aux is a light verb, it forms part of the *v*P shell. In B/M/O it is clear that the auxiliary is the v head. Such an idea finds support in den Dikken's (1995) demonstration that copulas are not lexical primitives but rather are overt realizations of functional heads.

The structure of the verbal complex as in (24) shows that it is really *v*P-AspP which reflects the fact that these complexes are a result of a union of two events. That is, Asp is the mediator between the two separate events represented by the *v*P shell and the VP. It is not surprising to find that the head of the AspP is the host for the particle which does the conjoining of the two states of events. The structure in addition predicts the typological finding that since it is no longer a *v*P-VP sequence, adverbial adjunction is not possible in V-Aux languages.

In the next section we present further evidence of the structure above made up of, as it were, two sub-trees.

7 Break in the Projection

We show that there is a "break" in the projection between the two sub-trees representing two separate states of events through the Asp head. The clearest evidence in favour of a break in the extended verbal projection is shown in (25), which shows that a whole range of insertions are possible at the AspP site (and only at this site). Thus Malayalam shows clefting, coordination and restrictive particle attachment. And Bangla/Oriya show attachment of topic marker, emphatic marker, regular light verbs and modals at this AspP site, as in).

Conside the following, the example in (a) is a case of clefting, (b) is a case of co-ordination, and in (c), a restrictive particle insertion.

(25) a. ezhuti-yiTT-aaN uLL-atə [Malayalam]
write-PERF-is COP-NOM
'it is having written that...' (closest translation)

a'. *ezhuti-yaaN iTT uLLatə
write-is-PERF COP-NOM

b. ezhuti-yiTT-*um* waracc-iTT-*um* unTə
write-PERF-COORD draw-PERF-COORD
'have written and drawn'

b'. *ezhuti-yum waracc-um iTT-unTə
write-COORD draw-COORD PERF-COP

c. ezhuti-yiTT-*ee* uLLuu
write-PERF-RESTR.P. COP.EMPH
'have only written'

c'. *ezhuti-yee iTT-uLL-uu
write-RESTR.P. PERF-COP.EMPH

In Malayalam, there are negative and positive polarity items which function as emphatic markers, *can* intervene between the Asp and the Aux, as below:

(26) a. awanatə ituware ezhuti-yiTT onnumilla
he that till.now write-PERF NPI NEGAUX
'He hasn't written it till now.'

b. awan atə ezhuti-yiTT okke unTə
he that write-PERF all (PPI) AUX
'He has written it.'

For Indo-Aryan languages, the following examples show the insertion of topic marker, modal verb, and regular light verbs at this site.

(27) a. **poRe-to-chi** [Bangla]
read.ASP-TOP-Lv
'as for reading, (I) have done it'

a'. ***poR-to-e-chi**
read-TOP-ASP-Lv

b. kar-i-par-i-th-ili [Oriya]
do-ASP-can-ASP-Lv
'(I) could do'

b'. ***kar-par-i-th-ili,**
do-can-ASP-Lv

c. nei-aas-ilaa [Oriya]
take-ASP-come-Lv
'(He) brought'

c'. ***ne-aas-ilaa**
take-come-Lv

Finally, we resolve the problem posed by the data below which shows, contrary to the typological generalization that we began with, that there are apparent **cases** of adverb **incorporation,** insertion of modal, and focus markers even in V-Aux languages. The example below shows the insertion of adverbial in **Bangla:**

(28) **nie-Ekhon-phelo** [Bangla]
take-ASP-now-drop.2
'as for taking, do it now'

In **(28),** however, the translation clearly indicates **topicalization.** With the structure in (24), it is possible to provide an easy explanation of such a **topicalization** of the AspP to an outer spec of *v*P (or TP in a **fully** extended structure) across the domain of the light verb. This analysis is strengthened by the **fact** that category movement is a pervasive phenomenon in mixed languages as shown by the derivation of the **German** verbal cluster in (29) (and similarly in **Bangla)** in (30) which **uses** similar roll-up movement.

(29) a. dass er **dieses Buchlesenkönnen** muss
that he this **book read** can must
'that he must be able to read this book'

b. $[_{AuxP1}\ [_{AuxP2}\ [_{VP}\ [_{Obj}$ dieses Buch] lesen t_{Obj}] können t_{VP}] muss t_{AuxP2}]

(30) a. kore-phelte-hote-pare
do-ASP-drop.ASP-become.ASP-can.ASP
'(it) can become possible to do it up' (free translation)

b. $[_{vP3}\ [_{vP2}$ kore$_i$ $[_{vP1}$ phelte $t_i]$ hote] pare $t_{vP2}]$

8 Remaining Issues

First, we mend the hole m the paradigm for Bangla in (17b) as this mending demonstrates an important property of Bangla/Oriya as opposed to Malayalam. Historically periphrastic tense is expressed m Middle Bangla with an epenthetic i which stands for the CP in the present analysis:

(31) col-i-che, kor-i-che 'is going', 'is doing'

Chatterji (1926: 1020) mentions the *–i* continues to *be* used in Assamese.

Secondly, m East Bangla dialects, the hole in the paradigm is actually sealed synchronically. The verbal form in *-ite* is also the typical progressive form of the standard literary Bangla:

(32) a. likh-ta-se [East Bangla]
b. likh-ite-che [Literary Bangla]
write-PROG-LV

Finally, it can be shown that the leading idea of a auxiliaries as light verbs is contained in dialectal forms of Bangla. In South western Bangla, the progressive is formed by combining the present tense of the main verb plus the form √Tha to mean 'to remain':

(33) a. kari-Thi
I do-I remain
'I am doing'

b. jau-Thu
you go-you remain
'you are going'

This lends further support to the leading idea that the Aux as the light verb indicates a sequential state of event and that the material that occupies the head of this light verb (v) is a grammaticalized form of a lexical verb (as in Malayalam, in (33) above, and also for *–ch*).

References

Bhattacharya, Tanmoy. 1998. "DP-internal NP movement," *University College London Working Papers in Linguistics,* 10: 225-252.

Bhattacharya, Tanmoy. 1999. *The structure of the Bangla DP.* Doctoral dissertation, University College London.

Bhattacharya, Tanmoy. 2000. Auxiliary selection and *Aspect, Workshop on Perfective,* Manchester.

Brody, Michael. 1995. *Lexico-Logical Form. A Radically Minimalist Theory.* Cambridge, *MA: MIT* Press.

Butt, Miriam.1998. Light verbs: underspecification vs. semantic bleaching. Seminar March (Madness), 1998.

Chatterji, Suniti K. 1926. *The Origin and Development of the Bengali Language, Part* II. Calcutta: Calcutta University Press.

Cinque, Guglielmo. 2000. On Greenberg's Universal 20 and the Semitic DP, Paper presented at the *Antisymmetry Workshop,* Cortona.

den Dikken, Marcel. 1995. Copulas. Manuscript, HIL, University of Amsterdam.

Hany Babu, M. T. In preparation. Indefinites and clause structure in Malayalam. Doctoral dissertation, University of Konstanz.

Heim, Irene. 1982. The semantics of definite and indefinite NP. Doctoral dissertation, University of Massachusetts, Amherst.

Hook, Peter E. 1973. The compound verb in Hindi. Doctoral dissertation, University of Pennsylvania

Hopper, Paul J. and Elizabeth C. Traugott. 1993. *Grammaticalization.* Cambridge: Cambridge University Press.

Jayaseelan, K. A. 1996. The serial verb construction in Malayalam. Ms, Central Institute of English and Foreign Languages, Hyderabad.

Kayne, Richard. 1994. *The Antisymmetry of Syntax.* Cambridge, *MA:* MIT Press.

Kondrashova, Natalia. 1996. "The Russian Copula: A Unified Approach," FASL, 171-198. Michigan.

Mahajan, Anoop. 2000. "Eliminating Head Movement," paper presented in GLOW 2000.

On Constructional Polysemy and Verbal Polysemy in Construction Grammar

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1 Introduction

Recent work by Goldberg (1995) in Construction Grammar places heavy emphasis on the role of grammatical constructions in determining verbal argument realizations. On this view, constructions are independent form-meaning pairs with their own semantics that are able to contribute constructional argument roles to a verb's participant roles. This approach has the advantage of not having to postulate implausible verb senses for verbs which may occur with non-subcategorized postverbal arguments such as sneeze in (1):

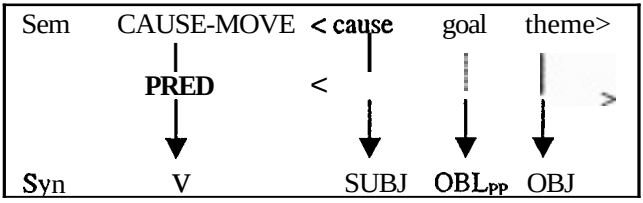
(1) Frank sneezed the tissue off the table. (Goldberg 1995: 152)

The main aim of this paper is to investigate whether Goldberg's (1995) account of caused-motion constructions of the type in (1) provides us with an analysis that is fine-grained enough to account for the full range of caused-motion constructions. In the next two sections, I will give a brief overview of Goldberg's (1995) framework, concentrating on the theoretical status of grammatical constructions and constructional polysemy. In Section 4, I will outline arguments which support a different, and in my view, more adequate analysis of constructional polysemy in terms of verbal polysemy and lexical semantic networks. I will outline this proposal in section 5.

2 Verbs and Constructions

Goldberg's (1995) analysis of caused-motion sentences such as in (1) assumes that there exists an independent caused-motion construction which associates a specific syntactic configuration with a specific semantics. The representation in (2) shows how the semantics of the caused-motion construction and the meaning of the matrix verb are combined in Goldberg's framework.

(2) a. Caused-Motion Construction (Goldberg 1995: 88)



b. sneeze: ⟨ **sneezer** ⟩

The boxed diagram in (2a) represents the caused-motion construction and consists of three different layers: In the top line of the box we find the construction's own meaning (Sem). It contains the semantic arguments of the construction (the constructional roles) and represents their semantic relations with respect to each other. Thus, the caused-motion construction is associated with the semantics 'X CAUSES Y TO MOVE Z.' Solid lines between the semantic roles and roles in the predicate's role array indicate that the semantic role must be fused with an independently existing verbal participant role. Dotted lines indicate that the construction is able to provide additional participant roles. The middle line of the construction contains the open slots into which the verb's participant roles fuse, and in the bottom line we find the overt syntactic realization of the semantic arguments (OBL stands for oblique) of the combined verb-construction semantics. Roles represented in bold are 'profiled' arguments, i.e., entities in a verb's semantics that are "obligatorily accessed and function as focal points within the scene, achieving a special degree of prominence (Langacker 1987)" (Goldberg 1995: 44).[2]

According to Goldberg, verbs are associated with specific semantic frames (cf. Fillmore 1982) that are represented in terms of their participant roles in their respective lexical entries. The lexical entry for ***sneeze*** in (2b) shows that the verb is associated with a single participant role, in this case the **sneezer.** The bold print representation of the **sneezer** indicates that it is lexically "profiled. When ***sneeze*** fuses with the caused-motion construction in (2a), then the verb contributes the **sneezer** role, whereas the construction contributes both a theme role as well as a goal role to the verb's semantics. In other words, ***sneeze*** specifies the means by which the CAUSE-MOVE relation is achieved, whereas the construction provides the rest of the semantics which then yields the interpretation in (1).[3]

Goldberg proposes the following construction-specific constraints that regulate whether a verb's semantics can fuse with the caused-motion construction.[4] These constraints are necessary in order "to avoid arbitrary lexical stipulations on each verb that could potentially occur in the construction." (Goldberg 1995: 164).

(3) Constraints on the application of caused-motion constructions

1. The cause argument can be an agent or a natural force. But it cannot be an instrument.
2. No cognitive decision can mediate between the causing event and the entailed motion.
3. If the caused motion is not strictly entailed, it must be presumed as a ceteris *paribus* implication.
4. Conventionalized scenarios can be cognitively packaged as a single event even if an intervening cause exists.
5. If the verb is a change-of-state verb (or verb of effect), such that the activity causing the change of state (of effect), when performed in a conventional way, effects some incidental motion and, moreover, is performed with the intention of causing the motion, the path of motion may be specified.
6. The path of motion must be completely determined by the action denoted by the verb. (Goldberg 1995: 1651174)

3 Constructional Polysemy

Besides the central caused-motion sense 'X CAUSES Y TO MOVE Z,' Goldberg proposes four systematically related yet distinct sense extensions of the caused-motion construction which she analyzes as constructional polysemy. On this view, the central sense 'X CAUSES Y TO MOVE Z' motivates the extended senses which by themselves each constitute a minimally different construction in terms of their meanings, yet all inherit the same syntactic specification of the core construction. The individual sense extensions of the caused-motion construction include 1) verbs of communication that have specific force-dynamics such as in (4a), 2) "force dynamic verbs that encode the removal of a barrier," as in (4b), 3) verbs that encode the concept of "X PREVENTS Y FROM MOVING Comp(Z)" as in (4c), and 4) verbs that mean "X HELPS Y TO MOVE Z" (1995: 162) as in (4d).

(4) a. Sam ordered him out of the house. (Goldberg 1995: 161)
b. Sam allowed Bob out of the room. (Goldberg 1995: 161)
c. Harry locked Joe into the bathroom. (Goldberg 1995: 162)
d. Sam helped him into the car. (Goldberg 1995: 162)

The main motivation for distinguishing between a central caused-motion construction (e.g., ***He pushed the box into the room*** (Goldberg 1995: 162)) and its extensions is the observation that the central construction

> "involves manipulative causation and actual movement, the scene to which transitive markers are applied earliest cross-linguistically (Slobin 1985) and which has been suggested as the most basic causative situation (Talmy 1976). Moreover, the other extensions are most economically described as extensions of this sense." (1995: 162)

Proposing constructional polysemy has the theoretical advantage of not having to posit lexical rules in order to account for sense extensions of verbs "whose various senses are not predictable and must be conventionally associated with the construction," according to Goldberg (1995: 34). That is, instead of postulating verb sense shifts in terms of lexical rules (cf. Pinker (1989), Rappaport Hovav & Levin (1998)), different types of caused-motion constructions which "exist independently of the particular lexical items that instantiate them" (Goldberg 1995: 224) are recruited to account for a verb's multiple argument realization patterns. On this view, each of the meanings of the sentences in (4) is the result of integrating the meanings of the verbs into the meanings of different types of caused-motion constructions.

With this overview of Goldberg's framework, let us now turn to the question of whether her analysis of caused-motion constructions is capable of adequately describing the full range of data. In what follows, I turn to a discussion of the lexical semantic factors that are responsible for deciding under which circumstances different types of caused-motion constructions can provide a verb with additional argument roles' as sketched out in (2) above.

4 Delimiting Constructions and Constructional Polysemy

Recall that the Goldberg approach to argument structure constructions aims for a "rich frame-semantic knowledge associated with verbs" (Goldberg 1995: 31) in order to "allow for the possibility of meaningful interpretation and translation, and to predict correct inferences." (1995: 29) To this end, Goldberg is integrating an approach towards semantic description labeled Frame Semantics, "a research program in empirical semantics which emphasizes the continuities between language and experience." (Petruck 1996: 1) The main idea behind Frame Semantics as developed by Fillmore (1982, 1985) lies in the assumption that words have to be understood in context in order to arrive at a complete semantic description. This means that a semantic description of a word should include information about how speakers apply their lexical knowledge in interpreting and producing real discourse. Fillmore proposes that in order to understand the meaning of words in a language we must first have knowledge of the conceptual structures, or semantic frames that underlie the meanings of words. Semantic frames contain frame elements, i.e., descriptions of the frame's participants in terms of situational roles. To this end, Goldberg points out that "frames are intended to capture useful chunks of encyclopedic knowledge." (Goldberg 1995: 26)

4.1 Integration of verbal and constructional semantics

In order to model the interaction between verbal and constructional semantics, Goldberg suggests a frame-semantic analysis of verbs whose "designation must

include reference to a background frame rich with world and cultural knowledge." (1995: 27) Admitting that "it is typically difficult to capture frame-semantic knowledge in concise paraphrase" (1995: 27), she proposes that by "distinguishing verbal semantics from constructional semantics, we can predict an observation noted by Pinker (1989) as to the nature of "syntactically relevant aspects of verb meaning," or what is here claimed to be constructional meaning." (1995: 28) With this distinction between verbal and constructional meaning in mind, let us now turn to a concrete example in which the participant roles of the verbs ***hit*** in (5) and ***strike*** in (6) interact with the caused-motion construction.

(5) a. hit <**hitter hittee**>
b. **Joe** hit the ball across the field. (Goldberg 1995: 153)

(6) a. strike <**striker** strikee>
b. ***Joe** struck the ball across the field.

Recall from section 2 that when a verb's semantics fuses with the semantics of the caused-motion construction, then the caused-motion construction adds the goal phrase to the verb's semantics. Note, however, that although the verbs ***hit*** and ***strike*** are closely related in meaning, only the former fuses with the caused-motion construction to yield an acceptable sentence whereas the latter does not.

This illustrates two points. First, the architecture of lexical entries presented by Goldberg does not have any features that may block a verb's integration into a construction on formal grounds. Notice that even the rich frame semantic information associated with the semantics of ***hit*** and ***strike*** does not include information that would make it possible to predict which verb may occur in the caused-motion construction. Second, because there is no mechanism available that restricts a construction's ability to supply constructional roles to a verb's semantics, there is - as far as I can see - no principled way by which the integration of ***strike*** in (6b) into the caused-motion construction may be straightforwardly blocked. Although Goldberg's constraints on the application of the caused-motion construction in (3) above seem initially as if they might rule out unacceptable instances such as (6b), they are not fine-grained enough to differentiate between the semantics of ***hit*** and ***strike*** in order to determine which verb may fuse with the central caused-motion construction.

The sentences in (5b) and (6b) show that Goldberg's constructional approach to caused-motion constructions is unprecise when it comes to determining which types of verbs may fuse with a construction. Whereas she argues that "the majority of cases appear to be predictable once a sufficiently detailed semantic characterization of the construction and associated verb classes has been accomplished" (1995: 222). we have seen that her adaptation of frame semantics is problematic when it comes to ruling out unacceptable caused-motion constructions. That is, verbs such as ***hit*** and ***strike*** do not show the same

constructional distribution although they are closely related in meaning and should thus form a somewhat coherent semantic verb class.

So far, our discussion has shown that there is a need for a richer, more detailed analysis of the factors determining the range of a verb's argument realization patterns. In what follows, I turn to an analysis of the factors involved in determining whether a specific sense of a verb may be attributed to the semantics of the central caused-motion construction.

4.2 Basic meaning and constructional meaning

In her discussion of the verb ***hit,*** Goldberg suggests that it has a basic sense and receives constructional argument roles from the caused-motion construction in order to license additional arguments at the syntactic level. Based on "several observations in the literature" that "lead to the conclusion that the verb in isolation does not inherently encode the caused-motion semantics," (1995: 153) she claims that ***hit*** in (7a) does not have a caused-motion interpretation, whereas in (7b) ***hit*** does have a caused-motion interpretation.

(7) a. Joe hit the table.
b. Joe hit the ball across the field. (Goldberg 1995: 153)

While her observation that ***hit*** has different interpretations is certainly true for (7a) and **(7b),** I suggest that the difference in interpretation is not due to the caused-motion construction which on Goldberg's view takes the basic verb ***hit*** in order to supply it with a caused-motion interpretation by providing a goal phrase. Instead, I propose that the different interpretations are due to a separate conventionalized sense of ***hit*** that has to be encoded in the lexicon. Compare the following sentences.

(8) a. Joe hit the ball.
b. *Joe hit the table across the field.

Sentence **(8a)** is formed in analogy to sentence (7a) above. It differs from sentence (7a) in that it contains a different postverbal NP as its patient argument. Note that in this case ***hit*** automatically receives a **different** interpretation. Thus, when hitting a table one typically takes the hand or some instrument in order to hit the table. The same kind of activity is taking place when one hits a ball. However, the two sentences differ in that when ***hit*** occurs with ***the ball*** as its postverbal patient as in (8a), then it has a particular default interpretation. More specifically, when ***hit*** occurs with ***the ball,*** hearers typically assume that the hitting event takes place with the intention of making. ***the ball*** move. This explains why ***hit*** in (7b) has a different interpretation than in **(7a).** On this view, ***Joe hit the ball*** inherently encodes a caused-motion sense of ***hit;*** it just happens

to be the fact that the speaker is not interested in conveying information about the direction in which the ball flew. Instead, the speaker is interested in conveying the importance of Joe's hitting the ball. The fact that the ball flew somewhere is in this particular context unimportant. However, if the speaker wishes to additionally convey information about the direction in which the ball flew as the result of Joe's hitting it, then the speaker is free to add a goal phrase. The crucial point here is that ***hit*** in (8a) and (7b) represent the same sense of ***hit*** (let us call it the sports sense of ***hit),*** whereas (7a) includes the pure physical impact sense of ***hit.***

Compare this situation with the case in which one hits a table, i.e., the pure physical impact sense of ***hit.*** When one hits a table, it is typically not the case that one intends the table to move. This also explains the oddity of (8b) which captures the observation that the pure physical impact sense of ***hit*** is distinct from the sports sense of ***hit.*** Thus, the fact that a speaker wants to convey information about a hitting event in which the hitter intends a table to move across a field as the result of his hitting the table seems strange to the conventional hearer. What these sentences show, then, is that the different interpretations of ***hit*** in (7a, b) above do not have to be attributed to the caused-motion construction contributing a separate goal phrase to the verb's participant roles, as Goldberg claims, but that the different senses are attributed to two distinct lexical senses of the same verb which have to be distinguished at the lexical semantic level. These sentences also suggest that speakers associate (at the lexical/pragmatic level) specific senses of a verb with specific result states or locations. Thus, the sports sense of ***hit,*** but not the pure physical impact sense of ***hit,*** seems to lexically specify a location for the postverbal NP (compare (7b) vs. (8b) above). So far, our observations seem to suggest that different senses of verbs exhibit distinct subcategorization properties that set them apart from other senses of the same verb. This is in contrast to Goldberg's suggestion that the caused-motion construction supplies the basic verb hit with additional constructional roles to arrive at a caused-motion sense of *hit.*[5]

In this connection, consider the polysemy network of ***strike,*** a verb closely related in meaning to ***hit.*** Although both verbs exhibit a similar distribution of postverbal arguments when it comes to the syntactic realization of their physical impact senses (cf. (9a) and (10a)), they differ from each other when they are used to express senses that are different from the pure physical impact sense.[6]

(9) a. He hit the fence.
b. He hit the fence with a bullet.
c. I hit the cane against the fence.
d. The bullet hit the fence.
e. He hit the ball into the field.

(10)a. He struck the fence.
b. *He struck the fence with a bullet.
c. He struck a stick against the fence.
d. A bullet struck the fence.
e. *He struck the ball into the field.

A comparison of the polysemy networks of ***hit*** and ***strike*** illustrates that it is difficult to predict the circumstances under which a caused-motion construction contributes additional constructional roles to a verb's "basic" meaning. In contrast to Goldberg, I suggest that we arrive at a more fine-grained account of polysemy if we pay more attention to the individual lexical semantic polysemy networks of verbs instead of attributing extended polysemy patterns to a series of caused-motion constructions.

4.3 Relationship between form and meaning

In order to evaluate Goldberg's claim that caused-motion constructions are capable of expanding a verb's meaning to a caused-motion meaning by supplying verbs with additional arguments such as **PPs,** I conducted corpus searches in the British National Corpus (BNC) and the COBUILD Bank of English. The search for **PPs** functioning as secondary predicates yielded sentences such as the following.[7]

(10) a. She glared a hole through me. (BNC)
b. They laughed themselves to death. (BNC)
c. I don't want to be sitting here working my socks off. (COBUILD)
d. It just drives me up the wall. (BNC)

The data in (10) illustrate two points. First, verbs occurring with **PPs** functioning as secondary predicates do not always encode a caused-motion meaning. That is, the **PPs *through*** me in **(10a), *to death*** in **(10b), *off*** in **(10c),** and ***up the wall*** in **(10d)** do not encode the end location of the postverbal NP. According to Goldberg's proposals, however, we would expect the **PPs** in **(10a)-(10d)** to encode the end location of the postverbal **NPs** because the verb does not seem to subcategorize for the postverbal **NPs** alone as the following sentences illustrate.

(11) a. *She glared a hole.
b. *They laughed themselves.
c. *I don't want to be **sitting** here working my socks.
d. ?It just drives me.

This means that identifying the syntactic configuration [NP V NP PP] with a specific semantics such as 'X CAUSES Y TO MOVE Z' does not always yield the expected results because the same syntactic pattern does not always encode the same semantics as **(10a)-(10d)** show.

The second point illustrated by the data in (10) is concerned with Goldberg's notion of expanded constructional polysemy which claims that there is a central caused-motion construction as well as four caused-motion constructions

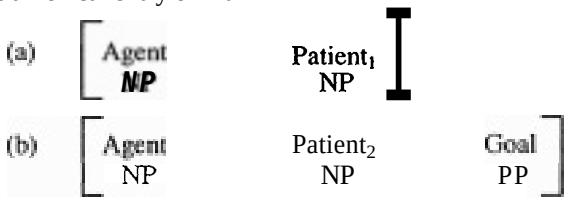
representing extensions of the central caused-motion sense (cf. section 3). If we compare the semantics of the sentences in (10a)-(10d) with the semantics of the extended caused-motion constructions exemplified by (4a)-(4d) above, we see that they do not readily fit into any of the extended caused-motion categories postulated by Goldberg. In principle, there are two ways to solve this problem. If we were to follow Goldberg's proposals in favor of constructional polysemy, we would have to postulate additional extensions of the caused-motion construction and its already existing inventory of related senses. Note, however, that proposing additional sense extensions entails a larger inventory of related constructions. It is not yet clear how large the entire inventory of related caused-motion constructions might be. But if we were to find that the inventory of English caused-motion constructions is considerably large, i.e., nearly as large as the number of individual verbs that instantiate it, then we would only reproduce lexical polysemy at the constructional level (including minor generalizations over coherent semantic classes of verbs).' In order to avoid such redundancy, I would like to suggest an alternative analysis.

Instead of having to enlarge the inventory of caused-motion constructions every time we find a new caused-motion usage of a verb that is not subsumed by an existing sense extension of the central caused-motion construction, I propose to shift the descriptive as well as the explanatory burden from the constructional level to a more fine-grained level, i.e., the lexical semantic level of verb meanings. On this view, we directly encode in a verb's lexical entry whether it occurs in a caused-motion pattern or not. This approach has two major advantages over Goldberg's constructional polysemy analysis. First, it eliminates the problem of having to state semantic constraints that restrict the application of constructions (cf. section 4.1). Second, higher-order constructional polysemy becomes obsolete because a verb's lexical entry already contains all of the conventionalized usage information necessary to account for a speaker's knowledge of the range of syntactic patterns with which a verb may occur? In what follows, I outline the main components of an alternative approach to constructional polysemy in more detail.

5 Verbal polysemy and lexical semantic networks

In order to account for the entirety of a verb's conventionalized usage patterns, I propose to encode all of its conventionalized interpretations in combination with their respective syntactic frames in terms of a mini-construction. Adopting the main ideas from Fillmore's (1982, 1985) theory of Frame Semantics, I suggest that each sense of a verb contains information about how it is used and interpreted in real world discourse. Each pairing of a distinct set of a verb's frame semantic information with a distinct syntactic pattern forms its own mini-construction as the following examples illustrate.

(12) Partial lexical entry of ***hit***



Agent: Entity exerting energy in order to forcefully come into contact with patient
$Patient_1$: Physical object
$Patient_2$: Physical object that can change location as a result of the Agent's forceful contact with it
Goal: Final location resulting from the patient's motion away from its original location

The partial lexical entry in (12) includes semantic and syntactic information about the constituents that may occur with the individual senses of ***hit.*** By including more specific frame semantic information about the verb's different arguments it becomes possible to define each sense of a verb in context. For example, while both (12a) and (12b) include the same frame semantic specifications for ***Agent,*** they differ from each other with respect to how the ***Patient*** is to be construed. The following examples illustrate the types of sentences licensed by (12a) and (12b).

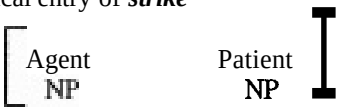
(13) a. Joe hit the table.
b.*Joe hit the table across the field.

(14) a. Joe hit the ball.
b. Joe hit the ball across the field.

(13a) is licensed by (12a) because Joe can be construed as an entity exerting energy in order to forcefully come into contact with a physical object that can be construed as a patient. In contrast, (13b) is ruled out because it is neither licensed by (12a) nor by (12b). That is, the "physical impact" sense of ***hit*** in (12a) is not conventionally associated with a caused-motion semantics whose Goal phrase is realized syntactically as a PP. The "sports" sense of ***hit*** in (12b) requires that the patient be construed as an object which can move as the result of the agent's forceful contact with it. However, it is part of frame semantic knowledge about tables and hitting that a table typically does not move to a specific location as the result of an agent's forceful contact with it. In other words, the conventionalized "sports" sense of ***hit*** in (12b) does typically not

allow for bigger objects like tables to occur with it. In contrast, both sentences in (14) are acceptable because the semantics of the postverbal arguments agree with the frame-semantic specifications of the "sports" sense of ***hit*** in (12b). ***The ball*** can be construed as a physical object that can change location as a result of the agent's forceful contact with it. Similarly, ***across the field*** can be construed as a goal, i.e., a final location resulting from the patient's motion away from its original location. Next, let us take a look at the partial lexical entry of ***strike*** and the types of sentences licensed by it.

(14) Partial lexical entry of ***strike***



Agent: Entity exerting energy in order to forcefully come into contact with patient
Patient: Physical object

(15) a. Joe struck the table.
b. Joe struck the ball.
c. *Joe struck {the table/the ball} across the field.

Both (15a) and (15b) are licensed by (14) because ***the table*** and ***the ball*** can both be construed as physical objects. (15c) is ruled out because the mini-construction in (14) does not include any ***Goal*** specifications that could license the PP ***across the field.*** The difference between ***hit*** and ***strike,*** then, lies in the fact that ***hit*** is conventionally associated with (at least) a "physical impact" sense and a caused-motion "sports" sense, whereas ***strike*** is associated with (at least) a "physical impact" sense but not with a caused-motion "sports" sense. By capturing the semantic and syntactic differences between ***hit*** and ***strike*** in terms of individual mini-constructions representing different senses of the respective verbs, it becomes possible to describe all of the conventionalized senses of the two verbs including their syntactic frames in terms of lexical semantic networks of related verb senses.

The alternative approach to constructional polysemy in terms of lexical semantic networks has a number of advantages. First, by shifting the explanatory burden from the abstract constructional level to the concrete level of lexical semantic polysemy networks, the notion of constructional polysemy becomes unnecessary. This reduces the theoretical machinery needed to describe the distribution of caused-motion constructions and thus simplifies the architecture of Construction Grammar.

Second, replacing constructional polysemy with lexical semantic networks solves the problem of having to state exact constraints capable of delimiting the

fusion of verbal and constructional argument roles (cf. our discussion in section 4.1). This also eliminates the need to state new semantic constraints that become necessary once exceptions to the existing inventory of constraints are found.

Third, by describing each conventionalized sense of a verb in terms of a mini-construction that includes semantic, pragmatic, and syntactic information, it becomes possible to make much more precise descriptions as to what types of arguments may occur with a given conventionalized sense of a verb. This approach is also supported by recent evidence from psycholinguistic research showing that "many polysemous words may be stored with both their contexts and the unique meaning for that context." (Harris 1998: 68/69)

6 Conclusions and Outlook

In this paper, I have outlined an alternative analysis of constructional polysemy which differs crucially from the account suggested by Goldberg. Whereas Goldberg proposes a set of related meaningful caused-motion constructions, I have shown that her notion of constructional polysemy is problematic when it comes to describing the distribution of a broader range of caused-motion constructions.

Instead of explaining the distribution of caused-motion constructions at the constructional level, I have argued for an alternative analysis in terms of verbal polysemy represented by lexical semantic networks." In my approach, each conventionalized sense of a verb is represented in terms of a lexical mini-construction containing semantic, pragmatic, and syntactic information about its conventionalized usage patterns. The advantage of this proposal is twofold. First, by replacing constructional polysemy with lexical semantic networks, the number of abstract constructions is reduced which means that the architecture of Construction Grammar is simplified. Second, by encoding individual verb senses in terms of mini-constructions, it becomes possible to arrive at much more precise descriptions about the distribution of verbal arguments.[11]

In this paper, I have only addressed the issue of how to account for the argument distribution of conventionalized verb senses. One question still open is how to analyze the argument distribution of non-conventionalized verb senses such as in ***Frank sneezed the napkin off the table.*** *I* suggest that these cases arise through a speaker's need "to convey meanings for which there is no ready-made, conventional expression." (Clark 1993: 78) In this case, ***sneeze*** is associated with a new form-meaning pairing by means of analogy with ***blow*** which is conventionally associated with a caused-motion semantics and the respective [NP V NP PP] frame. Clearly, further research remains to be done on how verbs acquire new meanings and syntactic frames by means of analogy that result in lexical innovations.

7 Notes

[1]The research reported here has been made possible by a postdoctoral fellowship by the "Deutscher Akademischer Austauschdienst" (DAAD) ("German Academic Exchange Service") to conduct research with members of the FrameNet research project (NSF Grant No. IRI-9618838, P.I. Charles Fillmore) at the International Computer Science Institute in Berkeley, California. The right to use the British National Corpus on part of FrameNet researchers was arranged through Oxford University Press.

[2]On Goldberg's view, constructions "can be viewed as free-standing entities, stored within the lexicon alongside lexical items, idioms, and other constructions that may or may not be partially lexically filled." (Goldberg 1995: 220).

[3]Note that it is not entirely clear how the augmented subcategorization frame in (2a) is mapped to the syntactic level in Goldberg's framework. In particular, Goldberg remains silent about how the linear order of verbal arguments in the bottom line of (2a) is changed so that the oblique PP is realized in final position. Furthermore, Goldberg claims that resultative constructions are metaphorical extensions of caused-motion constructions. However, it is not clear why resultative constructions exhibit a different syntactic ordering of postverbal arguments than caused-motion constructions (cf. Goldberg's illustration of the resultative construction (1995: 189) vs. her illustration of the caused-motion construction (1995: 88)). Another problem arises when the linear order of arguments of caused-motion and resultative constructions is changed, e.g., in passive constructions. In this case, it is not clear whether multiple constructions apply simultaneously, or in a step-by-step fashion. For similar critique, see Kay (1996: 1).

[4]Other, more general constraints regulating the fusion of verbal and constructional semantics include 'The Semantic Coherence Principle," and 'The Correspondence Principle" (cf. Goldberg 1995: 50).

[5]Note that there are many more senses attributed to ***hit*** which one would have difficulties accounting for in terms of independently existing meaningful constructions. Jackendoff (1990) identifies three distinct senses of ***hit,*** whereas Iwata (1998) identifies I I distinct, but systematically related, senses for ***hit.***

[6]The discussion of different syntactic patterns of ***hit*** and ***strike*** is based on Fillmore (1977).

[7]For a collection of corpus data showing the types of verbs that occur with PPs as secondary predicates, see Boas (2000).

[8]See also Kay's (1996: 1) discussion of constructional polysemy, constructional inheritance, and the relationship between caused-motion and recipient constructions.

[9]Replacing constructional polysemy with more concrete information about a verb's multiple conventionalized usage patterns also has the advantage of not having to postulate a separate yet related resultative construction in order to account for sentences such as ***Jack drove Flora crazy.*** On Goldberg's account, the resultative construction is a metaphorical extension of the caused-motion construction. The alternative approach suggested in this paper does not need additional constructional extensions because the relevant usage patterns are encoded in a verb's lexical semantic polysemy network (see also Iwata (1998) and Boas (2000)). Note that the partial lexical entries of ***hit*** and ***strike*** in (12) and (14) only represent a minimal set of individual senses of the respective verbs. In our discussion I have left out the other conventionalized senses of these verbs which are members of the respective lexical semantic networks.

[10]For related proposals in favor of describing multiple senses of verbs in terms of lexical semantic networks. see Iwata (1998) and Fillmore & Atkins (2000).

[11]Goldberg (1995: 37/39) points out that her analysis of constructional polysemy is aimed at capturing what has been traditionally been accounted for in terms of outputs of lexical rules. Note that on the alternative account presented in this paper, no input and output of any sort is needed to describe the different conventionalized senses associated with a verb. This means that there is no need for lexical rules or constructions in order to account for the distribution of conventionalized argument realization patterns, because they are listed as such in the lexicon and do not need to be generated in any way.

[12]For a more detailed outline of such a proposal, see Boas (2000: chapter 8).

8 References

Boas, H.C. **2000.** *Resultative Constructions in English and German.* **Ph.D.** dissertation. University of North Carolina at Chapel Hill.

Clark, E. **1993.** *The lexicon in acquisition.* Cambridge: Cambridge University Press.

Fillmore, C.J. **1982.** "Frame semantics", Linguistic Society of Korea (ed.), *Linguistics in the Morning Calm.* Seoul: Hanshin.

Fillmore, C.J. **1985.** "Frames and the semantics of understanding", *Quadernie di Semantica*, **6.2: 222-254.**

Fillmore, C.J., and B.T.S. **Atkins. 2000.** "Describing Polysemy: The Case of 'Crawl' ", Ravin, Y., and C. Laecock (eds.), *Polysemy.* Oxford: Oxford University Press. **91-110.**

Goldberg, A.E. **1995.** *Constructions: A Construction Grammar Approach to Argument Structure.* Chicago: University of Chicago Press.

Iwata, S. **1998.** *A Lexical Network Approach to Verbal Semantics.* Tokyo: **Kaitakusha.**

Jackendoff, R. **1990.** *Semantic Structures.* Cambridge, Mass.: MIT Press.

Harris, C. **1998.** "Psycholinguistic Studies of Entrenchment", Koenig. J.-P. (ed.), *Conceptual Structure, Discourse and Language.* Stanford: CSLI Publications. **55-70.**

Kay, P. **1996.** *Argument Structure: Causative ABC Constructions.* Manuscript. University of California at Berkeley.

Langacker, R.W. **1987.** *Foundations of Cognitive Grammar, Vol. I: Theoretical Prerequisites.* Stanford: Stanford University Press.

Petruck, M. **1996. "Frame** Semantics", **Verschueren,** J., J.-0. **Õstman,** J. **Blommaert,** and c. Bulcaen (eds.), *Handbook of Pragmatics.* Amsterdam: Benjamins. **1-13.**

Pinker, S. **1989.** ***Learnability*** *and Cognition.* Cambridge, Mass.: **MIT** Press.

Rappaport Hovav, M., and B. **Levin. 1998.** "Building Verb Meaning", Butt, M. and W. Geuder (eds.), *The Projection of Arguments.* Stanford: CSLI Publications.

Slobin, D. **1985.** "Crosslinguistic Evidence for the Language-Making Capacity", **Slobin,** D. (ed.), *A Crosslinguistic Study of Language Acquisition. Vol. 2: Theoretical Issues.* **Hillsdale,** NJ: Lawrence Erlbaum.

Talmy, L. **1976.** "Semantic causative types", Shibatani, M. **(ed.), *The*** *Grammar of causative constructions.* New York: Academic Press. **43-116.**

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Free Relatives as DPs with a Silent D and a CP Complement

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1. Free Relative Clauses (FRs): a Definition

Free relative clauses (henceforth, FRs) are embedded clauses with a gap in an argument or adjunct position and a clause initial wh- element. The FRs I will focus on in this paper are always tensed and occur in an argument or adjunct position, with a distribution that looks like the distribution of DPs.[1] Some examples of these FRs are given in (1), together with the sentences resulting from replacing the FRs with DPs.

(1) a. I appreciate [$_{FR}$ what you did for me].
a'. I appreciate [$_{DP}$ your help].

b. [$_{FR}$ Who couldn't sleep enough] felt tired the following morning.
b'. [$_{DP}$ The insomniacs] felt tired the following morning.

c. You can't smoke [$_{FR}$ where the kids are sleeping].
c'. You can't smoke [$_{DP}$ there].

d. He opened the door [$_{FR}$ when I was about to knock].
d'. He opened the door [$_{DP}$ then].

[1] This definition excludes FRs that are introduced by ***-ever*** wh- elements like ***whoever, whatever,*** etc. (cf. Tredinnick 1993), FRs that occur in dislocated positions (cf. Groos and van Riemsdijk 1981 for right-dislocated FRs in German and Dutch, and Suñer 1984 and Hirschbühler and Rivero 1983 for topicalized FRs in Spanish and Catalan), FRs that behave like free clausal adjuncts (cf. Izvorski 2000a), and FRs that are tenseless (cf. Grosu 1994, Izvorski 2000b). All these FRs show relevant syntactic and semantic differences with the FRs I am considering here.

I will now briefly compare FRs with Headed Relative Clauses, since this comparison has inspired much of the debate on the syntax of FRs that has developed in generative linguistics in the last two decades.

2. FRs and Headed Relative Clauses (HRs)

FRs can be replaced and paraphrased by Headed Relative Clauses (HRs). But, unlike HRs, FRs lack a head, that is they lack the overt nominal that precedes HRs and is in a syntactic and semantic relation with the gapped position inside HRs. For instance, the example in (2)a **I *like what I bought*** contains the FR ***what* I *bought.*** A quite natural way to paraphrase this FR would be with the HR ***the thing(s) you bought,*** as in (2)b **I *like the thing(s) you bought,*** where ***the things*** is the nominal head of the HR.

(2) a FR: I like [$_{FR}$ _____ what you bought].
b. = HR: I like [$_{HR}$ the thing(s) which you bought].
HEAD

Based on these distributional and semantic similarities, most scholars have assumed that FRs are just a particular kind of HRs (e.g. Bresnan and Grimshaw 1978, Groos and van Riemsdijk 1981, Larson 1987, Grosu 1994, among others). The main problem for this approach and also the major point of debate among its proponents is that the alleged head of a FR must be somehow different from the head of HRs and something ad hoc must be postulated to deal with this difference. Also, FRs are sensitive to matching effects while HRs are not. For instance, (3)a **I *bought with what I'll wrap it*** is ill-formed because the wh- phrase of the FR is a PP, while the corresponding HR in (3)b is perfectly fine. I will say more about matching effects later.

(3) Matching effects

a. FR: * I bought [$_{DP}$ [$_{PP}$ with what] **I'll** wrap it].
b. HR: I bought [$_{DP}$ the paper [$_{PP}$ with which] **I'll** wrap it].

3. FRs and Embedded Wh- Interrogatives (wh-Qs)

I will now compare FRs and embedded wh- interrogative clauses or, wh-questions (wh-Qs). These two constructions can look identical in form. However, they always differ in meaning. For instance, the FR in (4)a ***what you bought*** looks identical to the wh-Q in (4)b ***what you bought,*** but they are

interpreted differently. (4)a can be paraphrased with **(4)a' I *like the things you bought,*** while (4)b can be paraphrased with **(4)b' I *wonder which things you bought.***

(4) a. I like [$_{FR}$ what you bought].
a'. = I like [the thing(s) you bought].

b. I wonder [$_{wh\text{-}Q}$ what you bought].
b'. = I wonder [which thing(s) you bought].

Focusing their attention on this identity in form, a few scholars (Acquaviva 1989, Rooryck 1994, Donati 1997)[2] argue that FRs have the same syntactic structure as wh-Qs, that is FRs are bare CPs. The problem for this approach is that something ad hoc must be postulated in order to account for the crucial syntactic differences that there are between FRs and wh-Qs. In particular, FRs never allow extraction out of them, while wh-Qs may, as shown in (5) for Italian. Second, FRs show matching effects as we have already seen, while wh-Qs do not, as shown in (6) for English[3].

(5) Extraction (in Italian)

a. FR: * Queste sono le ragazze$_i$ che odio [$_{FR}$ chi ha invitato e$_i$].
These are the girls$_i$ that I hate [who invited e$_i$].
c. wh-Q: Queste sono le ragazze$_i$ che so [$_{wh\text{-}Q}$ chi ha invitato e$_i$].
These are the girls$_i$ that I know [who invited e$_i$].

(6) Matching effects

a. FR: * I bought [$_{DP}$ [$_{PP}$ with what] you could wrap it].
b. wh-Q: I wondered [$_{CP}$ [$_{PP}$ with what] you could wrap it].

---

[2] I just received a copy of Izvorski 2000b and I have not had the time to read it carefully yet. From what I have seen so far, she argues that the FRs we are considering are CP/DP. More precisely, when the wh- phrase of FRs moves to Spec of CP, the head C does not project a maximal category. but it is the wh- phrase itself which projects its maximal category. DP. This is the crucial difference that distinguishes FRs from wh- interrogatives.

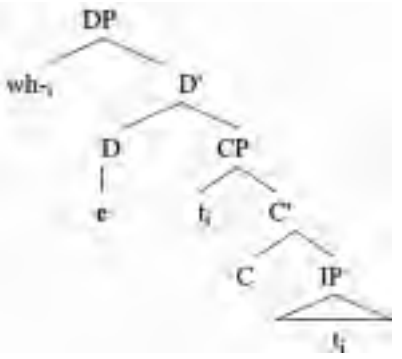
[3] Rizzi (1982: pp. 75-76, fn. 32) notices a further difference between FRs and wh-Qs in Italian. Gapping is allowed when wh-Qs are conjoined (cf. a), while it is not when FRs are conjoined (cf. b):

(a) Non ho ancora capito chi ha telefonata a Maria e chi (ha telefonato) a Giuliana.
'I haven't understood yet who called Maria and who (called) Giuliana.'
(b) Ho punito chi ha telefonata a Maria e chi *(ha telefonato) a Giuliana.
'I have punished who called Maria and who (called) Giuliana.'

4. Proposal: FRs = D + CP

Getting to my proposal, I think that the idea that FRs and wh-Qs are syntactically very similar is correct. What I am going to propose is a more articulated formulation of this idea, which can also account for the syntactic differences between FRs and wh-Qs. I would like to suggest that FRs, like wh-interrogatives, are wh-CPs. But, unlike interrogatives, they are not just wh-CPs. Their structure is slightly more complex: FRs are DPs with a covert D that takes a wh- CP as its complement.[4] This is the structure that is shown in (7).

(7) The structure of FRs



Since D is covert, it must be licensed by some agreement co guration. Following Koopman 2000 among the others, I assume that covert elements must enter in a Spec-Head relation with overt material in order to be licensed. Thus, the wh- phrase of FRs further moves from the specifier of CP to the specifier of DP in order to license the covert head D.

5. Wh- Words Crosslinguistically

A cross-linguistic look at the use of wh-words seems to support the idea that FRs are closely related to wh-Qs.

The phenomenon of wh- elements introducing (free or headed) relative constructions is quite common in Indo-European (cf. Smits 1989), and less common among other language families (cf. the survey in von Bremen 1987).

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[4] While I was finishing working on this talk, I found out that Alexiadou and Varlokosta (1996) suggest a very similar syntactic structure for free relatives on Modern Greek. Wilder (1998) assumes such a proposal in discussing a kind of FR that has been labeled "Transparent Free Relatives".

Focusing on Indo-European languages, an interesting generalization seems to arise, the one in (8):

(8) ***Crosslinguistic Generalization on Wh- Words***
Whenever a language allows the wh- elements that introduce wh-Qs to also introduce relative constructions, it always does so with **FRs**[5]. HRs, instead, can be introduced by elements that are morphologically unrelated to interrogative wh- words.

In other words, you can find either languages like **English**[6] that use basically the same set of wh- elements to introduce **FRs**, HRs and wh-Qs, or languages like German and Italian that use wh- elements to introduce **FRs** and wh-Qs, while **HRs** are introduced by morphologically unrelated elements. Crucially, you never find languages that use wh- elements with wh-Qs and **HRs**, but not with **FRs**.

These crosslinguistic observations suggest at least two conclusions. First, **FRs** cannot be just a subset of HRs, otherwise we would expect them to be introduced by exactly the same class of elements in all languages. Second, **FRs** seem to be directly related to wh-Qs since they are introduced by the same elements in all languages, while HRs are not.

6. Other DPs with a CP Complement

Let's now go back to the assumption that **DPs** can also take **CPs** as their complements. I would like to show that there is quite a bit of evidence that this option is independently made available by the grammar for other constructions.

6.1. Spanish

Spanish, for instance, has a construction where a **definite** determiner is immediately followed by the complementizer ***que***, as shown in (9).

(9) [DP [D **El**] [CP que no trabaja]] no come.
the-MASGSG that not works not eats
'The one who does not work does not eat.'

The distribution and interpretation of this construction are very similar to those of **FRs**, as you can see by comparing (9) with the corresponding FR in (10).

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[5] In a few languages, the wh- elements of FRs can or have to carry an affix that looks like the definite article (**e.g.** Modern Greek and Bulgarian).

[6] Diachronically, FRs are already attested in Old English at the beginning **13th** century, while restrictive HRs introduced by **wh-elements** became common in the 16'' (cf. von **Bremen** 1987).

(10) [DP [D e] [CP quien no trabaja]] no come.
who not works not eats
'The one(s) who do(es) not work do(es) not eat.'

Although Spanish pronouns can be homophonous with defmite determiners, there is evidence that D in (9) is a definite determiner and not a pronoun (cf. Plann 1980). For instance, *lo* in (11) can be interpreted only as [- human]. The same is true for the defmite determiner *lo* in (12). The homophonous pronoun *lo* in (13), instead, has different properties, since it can be both [- human] and [+human].

(11) [DP [D Lo] [CP que tu crees]] no es cierto.
the that you believe not is certain
'The thing(s) you believe is/are not certain'

(12) lo bueno
the good
'the good things'

(13) Lo ví.
it/him saw-1sg
'I saw it/him'

6.2. Wolof

A second interesting piece of evidence comes from Wolof, a West-Atlantic language spoken in Senegal and Gambia. Wolof has headless relative clauses that can optionally occur with defmite determiners, as shown in (14) (Harold Torrence p.c.). This construction really looks like a D with a CP complement, if you consider that defmite determiners are always post-nominal in Wolof.

(14) door-naa [DP [CP ki nga begg] [D (ki)]]
hit-1sg rel 2sg.subj love the
"I hit who you love"

63. Other languages

More generally, it has been claimed that in many languages an overt D can combine with CP to form a DP, especially in argument position. For instance, this what Williamson 1987 claims for some constructions in Lakhota, Zaring 1992 for ce que constructions in French, Roussou 1994 for Greek, Donati 1995

for factive clauses in Spanish, and Adger & Quer (no date) for Basque. Also, Kayne 1994 and Bianchi 1995 argue that headed relative clauses are DPs with an overt D that takes a CP complement.

In conclusion, there seems to be independent evidence that the option for some determiners to take a CP complement is independently available in the grammar.

7. Deriving the Syntactic Properties of FRs

In the last part of this paper, I would like to show how some of the properties of FRs I mentioned at the beginning can be accounted for by the syntactic structure I am proposing. Let's start with the distributional facts.

7.1. Distribution

Earlier we noticed that FRs have the same distribution as DPs. Now we can easily explain why. FRs have the same distribution as DPs because they are DPs.

7.1.1. PP *free* relatives?

The FRs introduced by where and when are not counterexamples to the claim above. It is true that they can occur where only PPs can occur, as shown in (15), but they can also occur in positions where DPs are usually preferable, as shown in (16):

(15) a. He was born [$_{FR}$ where I grew up].
a'. He was born [$_{PP}$ in my hometown]/ *[$_{DP}$ my hometown].

b. I went to Paris [$_{FR}$ when I was young].
b'. I went to Paris [$_{PP}$ in my childhood]/ *[$_{DP}$ my childhood].

(16) a. [$_{FR}$ Where I grew up] was a really small town.
a' [$_{DP}$ My hometown]/ *[$_{PP}$ In/To my hometown] was a really small town.

b. I thought about [$_{FR}$ when I was young].
b'. I thought about [$_{DP}$ my childhood]/ *[$_{PP}$ in my childhood].

The FRs introduced by where and when seem to behave like the expressions there, yesterday, last year, this *morning,* the day before, etc. These expressions can act as either DPs or PPs, depending on the context. Like DPs, they can be complements of a preposition, as shown in (18). But they can also occur where overt PPs can, as shown in (17).

(17) a. He was born [$_{DP}$ there].
a' He was born [$_{PP}$ in my hometown]/ *[$_{DP}$ my hometown].

b. I went to Paris [$_{DP}$ last year].
b'. I went to Paris [$_{PP}$ in my childhood]/ *[$_{DP}$ my childhood].

(18) a. [$_{DP}$ There] is really small.
a' [$_{DP}$ My hometown]/ *[$_{PP}$ in my hometown] is really small.

b. I thought about [$_{FR}$ yesterday].
b. I thought about [$_{DP}$ my childhood]/ *[$_{PP}$ in my childhood].

Following Larson 1985, I conclude that these expressions are DPs that also allow an adverbial interpretation. The same, I think, is true for FRs that are introduced by ***where*** and ***when.*** Syntactically, they are DPs; semantically, they can be interpreted as either DPs or PPs.

7.2. Extraction

About extraction, we noticed earlier that no element can be extracted out of a FR. Now we have a reason for this. FRs are "complex nominals", that is they are DPs with a CP inside. Extraction out of "complex nominals" is always blocked, as already noticed by Ross 1967. Any principle that would account for this generalization would also account for the ban on extraction out of FRs.

7.3. Matching effects

Let's now go back to the "matching effects" that I briefly mentioned at the beginning of the talk. Unlike HRs and wh-Qs, FRs must satisfy a restriction that is usually called "categorial matching". In brief: only wh- phrases of category DP can occur in FRs. In other words, the syntactic category of the FR and the syntactic category of its wh- phrase have to match.-For instance, (19)a ***I bought what I need*** is well formed since the wh- element of the FR ***what I need*** is the DP ***what.*** (19)b ***I bought with what I'll wrap it,*** instead, is ungrammatical because the wh- element of the FR ***with what I'll wrap it*** is the PP ***with what.***

(19) a. I bought [$_{DP}$ [$_{DP}$ what] I needed].
b. * I bought [$_{DP}$ [$_{PP}$ with what] I'll wrap it].

How can we account for categorial matching? As we already saw, the covert head D of FRs must be licensed by some phrase in its Spec position. Now, it is plausible that D can only be licensed by a phrase of the same category, that is something of category D. It follows that the wh- phrase of FRs, the only available licensor for D, must be a DP.

8. On the Nature of the Covert D of FRs

Before concluding, I would like to speculate a little bit on the nature of the covert D that I assume occurs in FRs. My tentative hypothesis is that the covert D occurs in FRs for purely syntactic reasons, like some sort of expletive determiner. The reason may be that bare CPs can occur inside IP only if they are specifically selected as such, as in the case of wh-Qs.

This hypothesis predicts that if a language allows FRs to occur in positions where DPs can not occur or do not need to, we should observe at least two consequences. 1) Since those FRs would no longer need a covert D, they would be plain wh- CPs and we would expect them not to show matching effects. 2) Since the covert D is an expletive, it is semantically empty and we would expect those FRs to receive the same interpretation as the FRs with a covert D.

These predictions seem to be borne out, at least for Spanish and Catalan. Topicalized free relatives in Spanish and Catalan (cf. Hirschbühler and Rivero 1983; Suñer 1984) allow matching effects to be violated and are interpreted similarly as the FRs in non-dislocated positions, as shown in the example below.

(20) Spanish (Suñer (1984: 365))
[DP [FP Con quien] me quiero casar] Cse ni me da la hora.
with whom me want to-marry that-one not-even me gives the time
'The one I want to get married to, that one does not even know that I exist.'

9. Conclusion

In this paper I suggested that a certain kind of FR, the ones that are tensed, have bare wh- elements, and do not occur in dislocated positions, these FRs have the syntactic structure of DPs with a covert D and a wh- CP complement.

I showed that this approach can directly account for the distribution of FRs, the ban on extraction and matching effects, since all these properties are related to the presence of the covert head D.

References

Acquaviva, P. 1989. Aspetti della complementazione frasale. Tesi di Laurea, Università di Pisa.

Albright, A. 1997. Case Attraction and the Head-Raising Analysis of Relative Clauses. Ms., UCLA.

Adger, D. & J. Quer. (no date). The syntax and semantics of Unselected Embedded Questions. Ms. Available at: *http://www-users.york.ac.uk/~da4/.* University of York and Universitat Autbnoma de Barcelona.

Alexiadou, A. & S. Varlokosta. 1996. "The syntactic and semantic properties of Free Relatives in Modem Greek", ***ZAS Papers in Linguistics, 5:*** 1-32.

von Bremen, K. 1987. ***English wh-Relativization: Cross-Linguistic Perspectives, Diachrony, Synchrony and Linguistics Theory.*** Bloomington: Indiana University Linguistics Club.

Bianchi, V. 1995. Consequences of Antisymmetry for the syntax of headed relative clauses. Ph.D. Dissertation, Scuola Normale Superiore, Pisa.

Bresnan, J. & J. Grirnshaw. 1978. "The Syntax of Free Relatives in English", ***Linguistics Inquiry, 9:*** 331-391.

Donati, C. 1995. "Il *que* relativo spagnolo", ***Lingua e Stile,*** 30: 565-595.

Donati, C. 1997. Elementi di sintassi della comparazione. Ph.D. Dissertation, Università di Firenze.

Groos, A. & H. van Riernsdijk. 1981. "Matching Effects in Free Relatives: a Parameter of Core Grammar". In A. Belletti, L. Brandi, L. Rizzi (eds.), ***Theory of Markedeness in Generative Grammar.*** Pisa: Scuola Normale Superiore, 171-216.

Grosu, A. 1994. ***Three Studies in Locality and Case,*** London-New York: Routledge.

Hirschbiihler, P. & M.-L. Rivero. 1983. "Remarks on Free Relatives and Matching Phenomena", ***Linguistic Inquiry,*** 14: 505-520.

Izvorski R 2000a. "Free Adjunct Free Relatives", ***Proceedings of WCCFL XIX,*** Boston: Cascadilla Press.

Izvorski R. 2000b. Free relatives and related matters. Ph.D. Dissertation, University of Pennsylvania.

Kayne, R. 1994. ***The Antisymmetry of Syntax.*** Cambridge, MA: The MIT Press.

Koopman, H. 2000. "The Spec Head Configuration". In H. Koopman, ***The Syntax of Specifiers and Heads: Collected Essays of Hilda J. Koopman,*** London-New York: Routledge

Larson, R. 1985. "Bare-NP Adverbs", ***Linguistic Inquiry,*** 16: 595-621.

Larson, R. 1987. "'Missing Prepositions'' and the Analysis of English Free Relatives", ***Linguistic Inquiry,*** 18: 239-266.

McCreight, K. 1988. Multiple Case Assignments. Ph.D. Dissertation, MIT.

Plann, S. 1980. ***Relative Clauses in Spanish Without Overt Antecedents and Related Constructions.*** Berkeley/Los Angeles: University of California Press.

Rizzi, L. 1982. ***Issues in Italian Syntax.*** Dordrecht: Foris.

Rooryck, J. 1994. "Generalized Transformation and the Wh- Cycle: Free Relatives as Bare Wh-CPs", ***Groeninger Arbeiten zur germanistischen Linguistik,*** 37: 195-209.

Ross, J.R. 1967. Constraints on Variables in Syntax. Ph.D. .Dissertation, MIT.

Roussou, A. 1994. "Nominalized Clauses in the Syntax of Modem Greek", ***UCL Working Papers in Linguistics,*** 3: 77-100.

Rudin, C. 1986. ***Aspects of Bulgarian Syntax: Complementizers and WH Constructions.*** Columbus, OH: Slavica Publishers.

Smits, R.J.C. 1989. ***The Relative and Cleft Constructions of the Germanic and Romance Languages.*** Dordrecht: Foris.

Suñer, M. 1984. "Free Relatives and the Matching Parameter", ***The Linguistic Review,*** 3: 363-387.

Taraldsen, K. 1981. "Case-conflict in Norwegian Topicalization". In ***NELS*** 11: 377-398.

Tredinnick, V. 1993. "On the distribution and interpretation of the suffix *-ever* in English free relatives", *Proceedings of CONSOLE II.*
Wilder, C. 1998. "Transparent Free Relatives", *Proceedings of WCCFL 18.*
Williamson, J. 1987. "An indefiniteness restriction on relative clauses in Lakhota". In E. Reuland and A.G.B. ter Meulen (eds.) *The representation of indefinites*, Cambridge, *MA:* The MIT Press.
Zaring, L. 1992. "French *ce* as a clausal determiner", *Probus*, 4.1: 53-80.

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Case, Animacy, and Word Order in Korean

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1 Introduction

It is a well-known fact that arguments can easily be scrambled out of a VP-complement or an S-complement in Korean and Japanese as long as they precede their head. However, it is also true that not all arguments can be scrambled out of a VP- or an S-complement. To distinguish whether or not an argument is scrambled, Kuno (1980) proposed the so-called Crossing-Over Constraint (COC) which says that the word order of two NPs with the same case is difficult to switch in Japanese. Chung (1998) also adopted a similar case constraint in the analysis of scrambling in Korean. The COC seems to provide an explanation for various scrambled constructions. As illustrated in (1), the COC enables us to correctly predict that the two NPs, *Mary-ka* and *uysa-ka* 'doctor', cannot be scrambled because they share the same case.

(1) a. Mary-ka uysa-ka toyess-ta.
Mary-Nom doctor-Nom became-Decl
'Mary became a doctor.'
b. ***Uysa-ka Mary-ka** toyess-ta.

On the contrary, the previous analyses based on the COC cannot account for the reason that there is a difference in scrambling possibilities between sentences in (1) and (2), whose two NPs bear the same case.

(2) a. John-i Mary-lul ton-ul cwuess-ta.
John-Nom Mary-Acc money-Acc gave-Decl
'John gave Mary some money.'

b. John-i ton-ul **Mary-lul** cwuess-ta.

The two NPs with the same case in (2a), *Mary* and ton 'money', should not be scrambled under the previous analyses, but they CAN be scrambled as shown in (2b). This fact suggests that the previous analyses based on the COC by Kuno (1980) and Chung (1998) are not sufficient to explain the scrambling phenomenon in Korean.

In order to appropriately account for this phenomenon, a theory must answer what constraints we need to restrict the possibility of scrambling among arguments.' To answer this question, we propose that unlike the previous analyses, not only the surface case but also all the possible cases of an NP should be considered. We also suggest that information on "animacy" of NPs plays an important role.

To support our proposal, we present a new analysis on the scrambling phenomenon in the framework of Head-Driven Phrase Structure Grammar (HPSG) in section 2. In section 3, we show that our newly proposed theory can provide a simpler explanation for various scrambled sentences in Korean. We will conclude this paper with a discussion on the theoretical implications of this proposal in section 4.

2 A Proposal

2.1 Potential cases

Current syntactic theories including Pollard & Sag (1987, 1994) consider the value of CASE to be monadic. On the contrary, we propose here that the value of CASE should be more complex to account for various scrambling data in Korean. To motivate this, we need to reconsider the data in (1) and (2) above. Though the two NPs, *Mary* and *uysa* in (I) and *Mary* and ton in (2), appear to carry the same case, there is a grammatical difference between the two scrambled sentences contrary to the previous analyses. In fact, the first NP *Mary* in (1) is different from *Mary* in (2) in that the NP *Mary* has different possibilities in case alternation with respect to its head (Cf. Lee & Cho (1998)). The first NP in (3), which does not alternate its case, cannot be switched with the second. However, the first NP in (4), which alternates its case between Nom and Dat, is

rather freely scrambled with the second. This observation enables us to assume that the values of case that an NP may possibly have with respect to its head may differentiate the scrambling possibilities among NPs.

(3=(1)) a. **Mary-ka/*eykey** uysa-ka toyess-ta.
Mary-Nom/*Dat doctor-Nom became-Decl
'Mary became a doctor.'
b. ***Uysa-ka** Mary-ka toyess-ta.

(4=(2)) a. John-i **Mary-lul/eykey** **ton-ul** **cwuess-ta.**
John-Nom **Mary-Acc/Dat** money-Acc gave-Decl
b. John-i ton-ul Mary-lul cwuess-ta.
'John gave Mary some money.'

If it is true that this difference in case alternation is a crucial factor in deciding the scrambling possibilities, then we need to postulate a new concept of case, i.e. Potential Case (PC), in addition to the existing Realized Case (RC). We propose that PC has as its value a list of all the cases an NP may possibly bear with respect to its head, and that RC has as its value a list of the actually realized case markers on the nominal, as in (5).

(5) *noun* [CASE [P(OTENTIAL) C(ASE) <…,[1],…>
R(EALIZED) C(ASE) <[1]>]]

Under this proposal, the sentences (3) and (4) can be informally represented as in (3') and (4'). The NP Mary in (3'a), which does not alternate its case, has <Nom> for the PC value so that it cannot have <Dat> for the RC value by the definition of (5), as in (3'b). The other NP *uysa* also has the same value for PC, i.e. <Nom>; Therefore, two NPs cannot be switched, as in (3'c). In (4') the first NP Mary, which alternates its case, has <Acc, Dat> as the value for PC, so it may have <Acc> or <Dat> for the RC value as in (4'a) and (4'b) respectively. The other NP *ton* has as the value for PC the list <Acc>, which is different from that of Mary, and therefore the two NPs can be switched, as in (4'c).

(3') a. Mary-ka uysa-ka toyess-ta.
-[PC <Nom>] -[PC <Nom>] became-Decl
[RC <Nom>] [RC <Nom>]

b. * Mary-ka uysa-ka toyess-ta.
-[PC <Nom>] -[PC <Nom>] became-Decl
[RC <Dat>] [RC <Nom>]

c. *Uysa-ka Mary-ka toyess-ta.
-[PC <Nom>] -[PC <Nom>] became-Decl

(4') a. John-i Mary-lul ton-ul cwuess-ta.
-Nom -[PC <Acc, Dat>] -[PC <Acc>] gave-Decl
[RC <Acc>] [RC <Acc>]

b. John-i Mary-eykey ton-ul cwuess-ta.
-Nom -[PC <Acc, Dat>] -[PC <Acc>] gave-Decl
[RC <Dat>] [RC <Acc>]

c. John-i ton-ul Mary-lul/eykey cwuess-ta.

Given this new concept of potential case, we can make a generalization as in (6).

(6) Generalization 1
Two NPs cannot be scrambled when they have the same Potential Case value.

2.2 Realized case and animacy

Although the difference in scrambling possibilities between (3) and (4) could be accounted for in terms of the potential case of an NP, RC also plays an important role in deciding the possibility of scrambling in the psych-predicate construction. In (7a), the first NP Mary alternates its case and has a different PC value from that of the second NP *John* as in (4'). Therefore, the two NPs would be expected to be freely scrambled under Generalization 1 above. However, this is not the case. Sentence (7b), where the two NPs, *Mary* and *John*, carrying the same RC value are switched, is ungrammatical; while (7c), where the two NPs with different RC values are switched, is grammatical. The grammatical difference between (7b) and (7c) demonstrates that RC is also a factor in deciding the possibility for scrambling.

(7) a. Mary-ka/eykey John-i mwusep-ta.
-[RC <Nom>/<Dat>] -[RC <Nom>] scared-Decl
[PC <Nom, Dat>] [PC <Nom>]
'Mary is scared of John.'

b. *John-i	Mary-ka	mwusepta
John-[RC **<Nom>]**	Mary-[RC **<Nom>]**	scared-Decl
c. John-i	Mary-eykey	**mwusep-ta**
John-[RC **<Nom>]**	Mary-[RC **<Dat>]**	scared-Dec

In addition to RC, information on the animate status of **NPs** should also be considered. Without information on "animacy" of **NPs,** we might have **difficulty** explaining the reason why the two **NPs** in **(4'a)** can be scrambled even when they have the same RC value while those in (7a) cannot. More specifically, we may represent the sentences in **(4'a)** and (7a) as in (8a) and **(9a),** with added information on "animacy" of the relevant arguments. The two **NPs** in (8a), ***Mary*** and ton 'money', are different in their animate status and can be scrambled with each other even when they have the same RC value as in **(8b).** In contrast, both **NPs** in **(9a),** ***Mary*** and John, are identical in their animate status and cannot be scrambled with each other when they have the same RC value, as in **(9b).**

(8=(4')) a. John-i	**Mary-lul/eykey**	ton-ul	cwuess-ta.
-Nom	[PC **<Acc, Dat>]**	[PC **<Acc>]**	gave-Decl
	[ANI +]	**[ANI -]**	
b. John-i	Mary-lul	ton-ul	cwuess-ta.
-Nom	[RC **<Acc>]**	[RC **<Acc>]**	gave-Decl
	[ANI +]	**[ANI -]**	

'John gave Mary some money.'

(9=(7)) a. **Mary-ka/eykey**	John-i	mwusep-ta.
M-[PC **<Nom, Dat>]**	J-[PC **<Nom>]**	scared-Dec
[ANI +]	**[ANI +]**	
b. *John-i	Mary-ka	mwusepta.
J-[RC **<Nom>]**	**M-[RC <Nom>]**	scared-Dec
[ANI +]	**[ANI +]**	

The observation above enables us to make another generalization as in (10):

(10) Generalization 2

Two **NPs** cannot be scrambled when they have the **same** values for both Realized Case (RC) and ANIMACY (ANI).

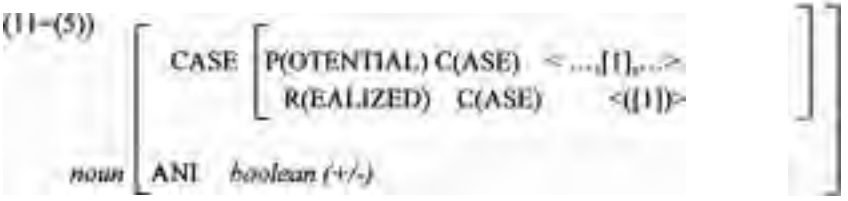
These two generalizations allow us to correctly predict the grammaticality of various scrambled sentences, which will be explored in section 3.

2.3 Theoretical background

Before we account for further scrambling data, we briefly state the feature system related to case and the scrambling mechanism assumed in this paper, and discuss how the two generalizations above can be implemented into the current HPSG framework.

As illustrated in (11)[5], our analysis considers CASE to have two attributes, i.e. PC and RC. The PC value is always at least length 1 while the RC value can be empty or more than length 1, and the element of the RC value must appear in the PC value. In addition, ANI has the boolean value.

(11=(5))



As for the scrambling mechanism, we adopt the Domain theory by Reape (1994), assuming that as long as the two generalizations above and the head-final rule in (12) are observed, an NP in a domain can be freely scrambled with another NP in the higher domain. Under the Domain theory, the two generalizations can be implemented into two different constraints as in (13), specifying when the order of NPs is fixed.

(12) Head-final Constraint: [ ] < head

(13) a. PC Constraint: $_{\text{domain1}}[NP_1[PC\ a]] <\ _{\text{domain2}}[NP_2[PC$ all

b. RC and ANI Constraint,

$_{\text{domain1}}[NP_1[RC\ \beta, ANI\ [1]]] <\ _{\text{domain2}}[NP_2[RC\ \beta, ANI\ [1]]]$

where domain 1 is higher than domain 2

Once the word order of two NPs is fixed in terms of the three constraints in (12) and (13a-b), the fixed word order must be kept in a higher domain of the sentence.

For comprehensibility, we demonstrate how the CASE feature system and the scrambling mechanism assumed here work for sentences (3) and (4). Given the CASE system and the scrambling mechanism including the three constraints, we can informally represent (3) and (4) as in (14) and **(15),** respectively. In **(14),** the NP ***uysa*** in the lower domain (domain 2) must follow the NP ***Mary-ka*** in the higher domain (domain 1) by the definition of the PC Constraint in **(13a),** because the two **NPs** share the same PC value, **i.e. <Nom>.** On the contrary, in (15) ***Mary-lul*** and ***ton-lul*** can be switched with each other, as long as they precede the head ***cwuess-ta.*** Since both **NPs** do not share the PC value or the **ANI** value, their order is not fixed by any constraints in (13).

(14) a. $_{domain1}$[Mary-ka $_{domain2}$[uysa-ka toyess-ta]].
-[PC <Nom>] -[PC <Nom>] became-Decl
[RC <Nom>] [RC <Nom>]
[ANI +] [ANI +]
'Mary became a doctor.'
b. ***[Uysa-ka** Mary-ka toyess-ta.]

(15) a. **John-i** $_{domain1}$[Mary-lul $_{domain2}$[ton-ul cwuess-ta]].
J-Nom M-[PC **<Acc,Dat>**] money-[PC **<Acc>**] gave-Decl
[RC **<Acc>**] [RC **<Acc>**]
[ANI +] [ANI -]
'John gave Mary some money.'
b. John-i $_{domain1}$[ton-ul **Mary-lul** cwuess-ta.]

So far, we have provided some empirical data to support our claim that we should consider PC as well as RC, and the animate status of **NPs** in order to account for the scrambling phenomenon in Korean. On the basis of this, we could capture the two generalizations implemented into (13). We will show in the next section that our analysis is a solution to the scrambling facts in Korean, by demonstrating how well our theory works for further scrambling data.

3 Data Analysis

3.1 Double accusative construction

Given the new concept of case and the constraints above, our analysis provides a simpler explanation for the scrambling facts in the so-called double accusative construction. Though the sentences contain two **NPs** with the same accusative case marker *-lul*, their scrambling possibilities are different.

The two **NPs** in **(16a)**, ***namwu-lul*** 'tree' and ***kaci-lul*** 'branch', cannot be scrambled as in **(16b)** while those in **(17a)**, ***Mary-lul*** and ton-ul 'money', can be switched as in **(17b)**.

(16) a. John-i domain1[**namwu-lul** domain2[**kaci-lul** cal-lass-ta.]]
John-[RC **<Nom>**] tree-[RC **<Acc>**] branch-[RC **<Acc>**] cut-Pst-Decl
[PC **<Nom>**] [PC **<Acc>**] [PC **<Acc>**]
[ANI +] [ANI -] [ANI -]
'John cut a branch of the tree.'

b. *John-i **[kaci-lul** **namwu-lul** cal-lass-ta.]
John-Nom branch-[RC **<Acc>**] tree-[RC **<Acc>**] cut-Pst-Decl

(17) a. **John-i** domain1[**Mary-lul** domain2[**ton-ul** **cwu-ess-ta.]]**
J-[RC **<Nom>**] M-[RC **<Acc>**] money-[RC **<Acc>**] give-Pst-Decl
[PC **<Nom>**] [PC **<Acc, Dat>**] [PC **<Acc>**]
[ANI +] [ANI +] [ANI -]
'John gave money to Mary.'

b. John-i [ton-ul Mary-lul cwu-ess-ta.]
J-[RC **<Nom>**] money-[RC **<Acc>**] M-[RC **<Acc>**] give-Pst-Decl
[ANI -] [ANI +]

c. John-i [ton-ul Mary-eykey cwu-ess-ta.]
J-[RC **<Nom>**] money-[RC **<Acc>**] M-[RC **<Dat>**] give-Pst-Decl
[ANI -] [ANI +]

This grammatical difference is hard to explain under the previous RC-based analyses because the two **NPs** in each example have the same case value. However, the difference is easily explained under our analysis. The two **NPs** in **(16)**, ***namwu*** and kuci, have the same value not only for PC but also for RC and ANI, so the order of the two **NPs** should be **fixed** in terms of both constraints in (13). Hence, the scrambled sentence **(16b)** is correctly predicted to be ungrammatical. In contrast, Mary in **(17a)** can alternate its case between **Acc (-*lul*)** and Dat (*-eykey*), so it has for the PC value the list **<Acc, Dat>,** which is different from that of ton, **<Acc>.** For this reason, the PC Constraint is not

applicable to this example. In addition, since the two NPs have different values for ANI, they can be freely scrambled regardless of the RC values. Consequently, the sentences (17b,c) are predicted to be grammatical, because the RC and ANI Constraint is not applicable to those NPs.

3.2 Seltukha- 'persuade' construction

The verb seltukha- 'persuade' subcategorizes for two NPs and a VP to be a complete sentence. As shown in (18a), seltukha- takes John as subject, Mary as object, and *Tom-eykey/ul ton-ul* cwu-lako as VP complement. The VP complement headed by *cwu-* 'give' has two object NPs, *Tom-eykey/ul* and ton-ul. In this case, Tom subcategorized by *cwu-* and Mary subcategorized by seltukha- cannot be switched as in (18b) while the two NPs, ton subcategorized by *cwu-* and Mary subcategorized by seltukha-, can be scrambled as in (18c).

(18) a. John-i [**Mary-eykey/lul** [Tom-eykeylul ton-ul cwu-lako] seltukhayss-ta.]
John- Mary- Tom- money- give-Comp persuaded-Decl
[RC <Dat>/<Acc>] [RC <Dat>/<Acc>] [RC <Acc>]
[PC <Dat, Acc>] [PC <Dat, Acc>] [PC <Acc>]
[ANI +] [ANI +] [ANI -]
'John persuaded Mary to give money to Tom.'

b. *John-i [Tom-eykey/ul Mary-eykey/lul ton-ul cwu-lako seltukhayss-ta.]

c. John-i [ton-ul Mary-eykey/lul Tom-eykey/ul cwu-lako seltukhayss-ta.]

The previous analyses cannot explain why the two NPs, Tom and Mary in (18b), cannot be scrambled with each other even when they have different RC values. Furthermore, the RC-based approach faces difficulties accounting for why the two NPs, Mary and ton in (18c), can be scrambled with each other, though they have the same RC value. However, our analysis can predict that the scrambled sentence (18c) is grammatical whereas (18b) is ungrammatical. As illustrated in (18a), the second NP Mary and the third NP Tom have the same value for PC, because they both alternate their cases. Therefore, the two NPs cannot be scrambled in terms of the PC Constraint in (13a). In contrast, the fourth NP ton can be freely scrambled with other NPs in the given sentence as in (18c) because it does not share a value for PC or ANI with other NPs. The fust NP John does not share the PC value or RC value with other NPs, so it can also

be scrambled with other **NPs.**

3.3 Yaksokha- 'promise' construction

The verb ***yaksokha-*** 'promise' in (19) subcategorizes for two **NPs** and a VP-complement. In this construction, when the NP Tom in the VP complement has a dative marker, it cannot be switched with Mary, as in **(19b).** When it has an accusative marker, it can be switched with any NP, as in **(19c).**

(19) a. John-i Mary-eykey **[Tom-eykey/ul** ton-ul cwukeyssta-ko] yaksokhan-ta.
John- Mary- Tom- money- give-Comp promises-Decl
[PC **<Nom>] [PC <Dat>] [PC <Dat, Acc>]** [PC **<Acc>]**
[ANI +] [ANI +] [ANI +] [ANI -]
'John promises Mary to give money to Tom.'

b. *John-i Tom-eykey Mary-eykey ton-ul cwukeyssta-ko yaksokhan-ta.
[RC **<Dat>]** [RC **<Dat>]**
[ANI +] [ANI +]

c.?John-i Tom-ul Mary-eykey ton-ul cwukeyssta-ko yaksokha-n-ta.
[RC **<Acc>]** [RC **<Dat>]**
[ANI +] [ANI +]

d. Mary-eykey John-i ton-ul Tom-eykeylul cwukeyssta-ko yaksokhan-ta.
[PC **<Nom>]** [PC **<Acc>]**
[ANI +] [ANI -]

Under our analysis, the scrambling facts in this construction can be explained as follows. As illustrated in **(19),** the second NP Mary and the third NP Tom have different PC values, so they are not constrained by the PC Constraint. However, since the two **NPs** have the same value for ANI, they cannot be scrambled with each other when they have the same value for RC as in **(19b),** by the definition of the RC and **ANI** Constraint. On the contrary, in **(19c),** where the two **NPs,** Mary and Tom, have different RC values, they can be scrambled because there are no constraints to restrict their scrambling. As in **(19d),** other **NPs,** John and ton, can be freely switched because the former does not share the PC value with others and the latter does not share the PC and **ANI** values.

3.4 *Mit-* **'believe'** construction

Verbs like ***mit-*** 'believe' or ***sayngkakha-*** 'think' may have two different subcategorizations. Namely, this verb subcategorizes for either an NP and a clause as in **(20a)** or two **NPs** and a VP-complement as in **(20b).** While the nominative NP ***Mary-ka*** in the embedded sentence cannot be switched with the NP John-i in the main clause, as in **(20c),** the accusative NP ***Mary-lul*** can **be** switched with John as in **(20d).**

(20) a. [John-i [Mary-ka papo-lako] mit-nun-Wsayngkakha-n-ta.]
J-[PC **<Nom>]** M-[PC **<Nom>]** idiot-Comp **believe/think-Pres-Decl**
'John **believes/thinks** Mary to be an idiot.'
b. John-i [Mary-lull [papo-lako] mit-nun-Wsayngkakha-n-ta.
[PC **<Nom>]** [PC **<Acc>]**
c. *Mary-ka John-i papo-lako mit-nun-talsayngkakha-n-ta.
[RC **<Nom>]** [RC **<Nom>]**
[ANI +] **[ANI** +]
d. Mary-lul John-i **papo-lako** mit-nun-Wsayngkakha-n-ta.
[RC **<Acc>]** [RC **<Nom>]**
[ANI +] **[ANI** +]

The scrambling data are also accounted for under our analysis. Because the two **NPs** in **(20a),** John and ***Mary,*** have the same PC value, as well as the same RC and **ANI** values, they cannot be scrambled with each other via both the PC Constraint and the RC and **ANI** Constraint. In contrast, when Mary has **<Acc>** for the PC and RC value, it can be switched with the nominative NP John because they are not subject to any constraints as in (13).

4 Conclusion

It is a well-known fact that the Korean language has various case markers and is a **free** word order language. Many linguists believe that there might be some relationship between the case markers and the scrambling possibilities. To exploit this relationship, Kuno (1980) and Chung (1998) have proposed the so-called COC constraint that is interpreted as the RC-based constraint under our

analysis. Though the RC-based approach could provide an explanation for some scrambling facts in Korean and Japanese, it is argued that the theory is still insufficient to cover the empirical data presented above.

Hence, we have proposed a new concept of case and scrambling mechanisms to account for more scrambling data in Korean. In doing so, we claim that in addition to the Realized Case (RC) of an NP, information on all the Potential Cases (PC) that an NP may possibly have with respect to its head is needed. Moreover, we found that information on "Animacy (ANI)" of an NP should also be considered. With this new concept of case system, we could capture the two generalizations from various scrambling data and implement them into the two LP constraints: the PC Constraint, and the RC and ANI Constraint. These constraints might be interpreted as one of our processing strategies: When a given sentence is ambiguous, we tend to regard the sentence as an unscrambled one. That is, though NPs are freely scrambled in Korean as long as they precede their head, the freedom of word order can be fixed when scrambling may cause ambiguity in interpretation. It is clear that this tendency is formally expressed within the two constraints.

If our approach based on the new concept of case and the scrambling mechanism is on the right track, further scrambling data would be expected to be accounted for without additional tools.

Notes

[1] In this paper, we do not deal with the scrambling phenomenon between adjuncts and arguments. So the scrambling possibility between adjuncts and arguments in sentences such as the Double Nominative Construction remains for further study. (Cf. Cho (1999))

[2] **Urushibara** (1991) argued that the Korean dative case marker '*-eykey*' should be a postposition marker, rather than a case marker. If her claim is correct, **(11)** can be modified as in (A). However, we still regard the marker '*-eykey*' as Dat in this paper.

(A)

marker		
	PC	<[1]>
	PostPosition	<[2]>
	Realized Marker	<([2]),([1])>
	ANI	*boolean*

References

Cho, Sae-Youn. 1999. "Two Types of Double Nominative Constructions in Korean", Presented at the Conference on Korean Linguistics in conjunction with the 1999 Linguistic Institute. Ms.

Chung, Chan. 1998. "Case, Obliqueness, and Linearization in Korean", ***Proceedings of the FHCG-98.*** Ms.

Kuno, Susumo. 1980. "A Further Note on Tonoike's Intra-Subjectivization Hyothesis", MIT Working Paper in ***Linguistics*** 2.

Lee, Nam-Geun and Sae-Youn Cho. 1998. "Case-Marking Properties of Verbal Nouns and ha-in Korean Causatives", ***Selected Papers from the 11th ICKL***: 653-662. University of Hawaii at Manoa.

Pollard, Carl and Ivan Sag. 1994. ***Head-Driven Phrase Structure Grammar.*** CSLI.

Pollard, Carl and Ivan Sag. 1987. ***Information-Based Syntax and Semanfics: Fundamentals. CSLI Lecture Notes, No.*** 13. Chicago: University of Chicago Press.

Reape, Michael. 1994. "Domain Union and Word Order Variation in German", ***German in Head-Driven Phrase Structure Grammar:*** 151-196. CSLI.

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The Syntax and Semantics of NPI Licensing in Korean

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1 Introduction

Researches on the negative polarity **items** (NPIs, henceforth) in Korean have been primarily centered on argument NPIs such as ***amwuto*** (anyone) and ***amwukesto*** (anything)), which can appear only in the negation and before clause. We contribute to broaden its perspective by introducing the adverbial NPI, ***te isang*** (any more), which shows broader distribution than argument **type** NPIs, and propose the syntax and semantics of NPI licensing in Korean.

1.1 The morphology of the NPIs

The argument **NPI** consists of ***amwu*** (any), N and ***to*** (even) morphologically, and N occasionally does not realize phonologically, in which case the NPI is construed as referring to a human being. Thus ***amwuto*** (anyone) refers to a human being, while ***amwukesto*** (anything) refers to the inanimate object, since in the latter ***kes*** (thing) refers to an inanimate object.' Meanwhile, the adverbial NPI ***te isang*** (any more) is typically the one, which does not indicate its NPI status morphologically (see **Chung** (1993) and Lee (1999), among others).

1.2. The distribution of the NPIs

Now let us turn to the distribution of the two types of NPIs in Korean. As opposed to English NPIs, which can appear in various contexts, which **Klima** (1964) calls affective as in (1), Korean NPIs cannot appear in some of these environments.

(1) a. John did not see anyone.
b. Before anyone came, John left his office.
c. I doubt anyone came to the party.
d. If anyone comes, I will introduce him to my instructor.
e. Everyone who knows anything about John was invited to his party.
f. John runs faster than anyone does.

The argument NPI ***amwuto*** (anyone) can appear in the negation and before clause, but not the other environments as shown in (2).[2,3]

(2) a. **John-un amwuto mannaci** an haessta.
J-TOP anyone meet NOT did
'John did not meet anyone'
b. [$_{CP}$ **John$_i$-i amwuto manna-ki** ceney] **ku$_i$-nun** ttenaessta.
J-NOM anyone meet before he-TOP left.
'Before John met anyone, he left'
c. * Na-nun [$_{CP}$ John-i **amwuto mannessnun-ci] uysimsulepta.**
I-TOP J-NOM anyone **met-COMP** doubt
'I doubt that John met anyone'
d. *[$_{CP}$ **amwuto** onta-myun **]** John-nun cip-ey **kalkesita.**
anyone come-if J-TOP home-to will go
'If anyone comes, John **will** go home'
e. *[$_{NP}$[$_{IP}$ **amwuto coaha-NUN] salam motwu-ka]** party-ey owessta.
anyone like-NUN every man-NOM party- to came
'Every man anyone likes came to the party.'
f. *Mary-nun **[$_{IP}$ amwuto sayngkakhaess-tun kes] pota**
M-TOP anyone thought-TUN KES than
hwelssin te ttokttokhata.
far is smarter
'Mary is far smarter than anyone thought so'

The adverbial **NPI *te isang*** (any more) on the other hand can appear in most of the affective environments except for the relative clause headed by the universal quantifier and the comparative construction, as shown in (3).[4]

(3) a. John-un **te isang chayk-ul** ilkci an **haessta.**
J-TOP any more book-ACC read NOT did
'John did not read books any more'
b. [$_{CP}$ John-i ku chayk-ul **te isang ilkki** ceney] Jane-i ttenaessta.
J-NOM that book-ACC any more read before J-NOM left
'Before John read the book any more, Jane left'

c. Na-nun [$_{CP}$ John-i Mary-lul te isang **mannananunci**] uysimsulepta.
I-TOP J-NOM M-ACC any more meet-COMP doubt
'I doubt that John meets Mary any more'

d. [$_{CP}$ John-i ku chayk-ul te isang **ilknunta-myun],**
J-NOM that book-ACC any more read-if
Na-nun **kukes-ul** Mary-eykey pillyecukeessta.
I-TOP it-ACC M-to will lend
'If John reads the book any more, I will lend Mary the book'

e. ?*[$_{NP}$ [$_{IP}$ **ku** chayk-ul te isang ilkess-tun **]** **salam motwu-ka]**
that book-ACC any more read-TUN every man-NOM
ku chayk-uy ceca-lul piphanhaessta
that book-POSS author-ACC criticized
'Every **man** who read the book any more criticized its author.'

f. ?*Mary-nun [$_{IP}$ John-i **te** isang sayngkakhaess-tun kes **]** **pota**
M-TOP J-NOM any more thought-TUN KES than
hwelssin te ttokttokhata.
far is smarter
'Mary is far smarter than John thought any more.'

(4) environment	Argument NPI amwuto (anyone)	Adverbial NPI te isang (any more)
Negation	OK	OK
Before clause	OK	OK
Adversative predicate	*	OK
Conditional	*	OK
Relative clause headed by a universal quantifier	*	?*
Comparative Construction	*	?*

2 The Semantics of NPI licensing in Korean

The fact that Korean NPIs cannot occur in some environments where English NPI can still appear may lead one to wonder what will be a correct generalization for Korean **NPIs** in terms of semantics. For this one may think of a couple of options.

2.1 Mathematical function **types**

Chung (1993) adopts the mathematical function types by Zwarts (1990, **1998),** whose essential idea is to divide monotone-decreasing function into several

function types **as** in (5) to account for the cross-linguistic variation of the distribution of various types of **NPIs**. Chung argues that *te* isang (any more) is semantically licensed by the anti-additive function.

(5) a. Monotone-decreasing: iff f(X v Y) → f (X) ∧ f (Y) and f (X) v f (Y) → f (X ∧ Y)
b. Anti-additive: iff f(X v Y) ↔ f(X) ∧ f(Y)
c. **Anti-morphic**: anti additive plus f(X ∧ Y) → f(X) v f(Y)

Chung's (1993) claim is not correct, since some of the adversative predicates such as nollapta (be surprised) and *yukamsulepta* (be sorry) in Korean, which is anti-additive **as** illustrated by the inference pattern in (6-7) still cannot license the NPI **as** illustrated in (8).

(6) a. Na-nun John-ina Mary-ka hakkyo-ey otani nollapta. ↔
I-TOP J-or M-NOM school-to come be surprised
'I am surprised that John or Mary came to school'
b. Na-nun John-i hakkyo-ey otani nollapko **kuliko**
I-TOP J-NOM school-to come be surprised and
Mary-ka hakkyo-ey **otani** nollapta.
M-NOM school-to come be surprised
'I am surprised that John came to school and surprised that Mary came to school'

(7) a. Na-nun John-kwa **Mary-ka** hakkyo-ey ota-ni nollapta. ←
I-TOP J-and M-NOM school-to come-COMP be surprised
'I am surprised that John or Mary came to school'
b. Na-nun John-i hakkyo-ey ota-ni nollapkena
I-TOP J-NOM school-to come be surprised-or
Mary-ka hakkyo-ey ota-ni nollapta.
M-NOM school-to come-COMP before
'I am surprised that John came to school or surprised that Mary came to school.'

(8) ?* Na-nun [CP John-i Mary-lul **te isang mannata-ni**] nollapta.
I-TOP J-NOM M-ACC any more meet-COMP is surprised
'I am surprised that John meets Mary any more'

Furthermore, Chung cannot provide any function type for the Korean argument **NPI** in (4) either. Thus it is skeptical whether the mathematical function types can be a useful tool accounting for the **NPIs** in Korean.

2.2 Downward entailment

Interestingly, the environments in (4), where Korean NPIs can occur mostly share a semantic property of downward entailment by Ladusaw (1980).[5]

As an alternative of mathematical function types, let us thus suggest downward entailment for the semantic licensing of NPIs in Korean. The definition of downward-entailing function, together with upward entailing function is given in (9):

(9) a. For any sets X, Y such that $X \subseteq Y$, a function f is downward entailing iff $f(Y) \rightarrow f(X)$.
b. For any sets X, Y such that $X \subseteq Y$, a function f is upward entailing iff $f(X) \rightarrow f(Y)$

Two questions need to be addressed. One question is that why the argument NPI ***amwuto*** (anyone) occurs only in the negation and before clause, as opposed to the adverbial NPI ***te isang*** (any more). For this, we tentatively propose that the argument NPI ***amwuto*** (anyone) should ***be*** in the scope of a downward entailing expression, which denies a presupposition of the likelihood scale, while the adverbial NPI ***te isang*** (any more) should be in the scope of a downward entailing expression. (cf. Lee and Horn 1994).[6] The elaboration of the notion of downward entailment along this way can account for the limited distribution of the argument NPI ***amwuto*** (anyone), since negation and before clause, but not the others in (4), are presupposition-denying downward entailing environment.'

The other question is: If the adverbial NPI ***te isang*** (any more) is licensed in the scope of the downward entailing expressions in Korean, why not in the relative clause headed by a universal quantifier and comparative construction, which are typically downward entailing, too?

Before answering this important question, we want to remind the reader of the observation made in the literature: The existence of a complementizer is essential for NPI licensing in constructions such as the adversative predicate, relative clause headed by a universal quantifier, and the comparative clause (see Hoeksema 1983, Progovac 1994, and Laka 1990 among others).

(10) a. * na-nun John-i **te isang** uysimsulepta
I-TOP J-NOM any more doubt
'I doubt John any more'
b. Na-nun [$_{CP}$ John-i Mary-lul **te isang** mannanun-ci] uysimsulepta
I-TOP J-NOM M-ACC any more meet-COMP doubt
'I doubt that John meets Mary any more'

(11) a. *I doubt anyone
b. I doubt that anyone will come.

What the above examples in (10-11) suggest is that the complementizer plays a crucial role for the NPI licensing in this construction. In a similar fashion, ***any*** in the reduced relative clause and the NP comparative construction in **(12-13),** which lacks the complementizer, has a strong tendency of being interpreted as a free choice ***any,*** as reported by Progovac (1994: 71) and **Hoeksema** (1983: 409).

(12) Every man with any gun must report to the police station.
(13) a. This girl is smarter than almost any boy.
b. This movie is more important than nearly anything by **Antonioni.**

We thus suggest that the nonoccurrence of te ***isang*** in the relative clause headed by the universal quantifier and the comparative construction in Korean in **(3ef),** repeated as **(14ab),** is attributed to the lack of the complementizer.[8]

(14) a. ?*[$_{NP}$ [$_{IP}$ **ku** chayk-ul te **isang** ilkess-tun] salam **motwu-ka]**
that book-ACC any more read-TUN every man-NOM
ku chayk-uy ceca-lul **piphanhaessta.**
that book-POSS author-ACC criticized
'Every man who read the book any more criticized its author.'
b. ?*Mary-nun [$_{IP}$ John-i te **isang** sayngkakhaess-tun kes] pota
M-TOP J-NOM any more thought **TUN KES** than
hwelssin te **ttokttokhata.**
far is smarter
'Mary is far smarter than John thought any more'

Below we will introduce morphological and syntactic evidences, which support the nonexistence of the complementizer in these constructions in Korean.

(15) a. Ipkoiss-nun oss-i tele-un sinsa.
is wearing-NUN clothes-NOM is dirty-UN gentleman
'the gentle man, who the suit t_i is wearing is dirty'
b. Ipkoiss-nun **oss-ul** choaha-nun **sinsa.**
is wearing-NUN clothes-ACC like-NUN
'the gentle man, who likes the suit t_i is wearing'
(16) a. John-un **caki yepese ilkkoiss-nun** salam-i **sayngkak** haess-tun kes **pota**
J-TOP self next was reading-NUN man-NOM imagine-TUN KES than
te **manun** chayk-ul ilkessta
more book-ACC read
'John read more **books,** than the man who was reading **t_i next** to him imagined'

b. **John-un** Tom-i pilley-se **motwun salam-i** hwaka nakehaess-tun kes
J-TOP T-NOM checked out-because everyone-NOM got angry-TUN **KES**
pota te manun chayk-ul pilleyessta.
than more books-ACC checked out
'John checked out more books, than everyone got angry because Tom checked out t_i'

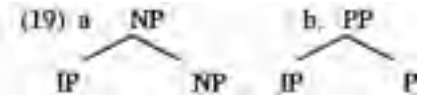
Morphologically, *(n)un* in (15) and ***tun*** *kes* in (16) are morphemes which express past and retrospective past tense respectively (see Lee 1991, Jung 1990, and Suh 1994, among others). This suggests that they head IP rather than CP. Pota (than) in (16) is claimed to be a postposition (Suh 1994: 778).

Locality effect is not witnessed in the Korean relative clause and comparative clause as indicated by the gap inside the syntactic island in (15-16) (Ross 1967). Relative clause and the comparative clause in English are claimed to involve operator movement into Spec CP and obey subjacency (Chomsky 1977). Thus the examples involving island as in (17-18) are reported to be ungrammatical.

(17) a *The gentle man who the suit is wearing is dirty.
b. *The gentle man who likes the clothes is wearing.
(18) a. *John read more books than a man who was reading next to him imagined.
b. *John checked out more books than everyone got **angry** because Tom checked out.

Why do Korean comparative construction and relative clause not show subjacency effect if these constructions in Korean also involve operator movement into Spec CP? Assuming operator movement into Spec CP for the relative clause and comparative clause, the lack of locality effect is a puzzle unless one stipulates operator movement in these constructions in Korean is immune to subjacency. We wish to interpret the lack of subjacency effect in these constructions as the result of the lack of the complementizer. Thus what apparently looks like a gap left by the operator movement is actually a base-generated zero pronoun in these constructions in Korean.

We thus suggest the following in (19) for the relative clause and the comparative clause in Korean:



Given our claim for the lack of the complementizer in these two constructions and the observation in the literature for the relevance of it for NPI licensing, the

ungrammaticality of the examples in (14) thus follows.

3 The Syntax of NPI licensing in Korean

We assumed that NPIs in Korean should be in the scope of the licenser. (One may wish to construe ***being in the scope of*** the licenser ***as being in the c-command domain of*** the licenser, since c-command is the logical notion of scope (Reinhart 1976, May 1977, among others). Being in the scope of (or in the c-command domain) of the licenser, however, cannot be a necessary and sufficient condition for NPI licensing in Korean, since NPIs in Korean should be in the same clause with the licenser as formulated in (20).

(20) *[[$_{CP}$ NPI...] licenser]

The examples in (21-22) show that argument NPI ***amwuto*** observe the locality condition in (20), which we will call clause-bound condition.

(21) a. [$_{CP}$ John-i **amwuto** coahanci an hanta]
J-NOM anyone like NOT do
'John does not like anyone'
b. *[$_{CP}$ John-un [$_{CP}$ Mary-ka **amwuto** coahanta-ko] mitci an hanta]
J-TOP M-NOM anyone likes-COMP believe NOT do
'John does not believe that Mary likes anyone'

(22) a. [$_{CP}$ **amwuto o-ki** ceney], **John-un** samusil-ul **ttenaessta.**
anyone come before J-TOP office-ACC left
'Before anyone came, John left his office'
b. *[$_{CP}$ Mary-ka John-eykey [$_{CP}$ **amwuto** owessta-ko] malhaki ceney]
M-NOM J-to anyone came-COMP say before
John-un samusil-ul ttenaessta
J-TOP office-ACC left
'Before Mary said to John anyone came, John left his office'

The same is true for the adverbial NPI ***te isang*** (any more) ***as*** shown in (23-26).

(23) a. [$_{CP}$ John-un **te isang** chayk-ul **ilkci** an haessta]
J-TOP any more book-ACC NOT read NOT did
John did not read the book any more'
b. *[$_{CP}$ John-un [$_{CP}$ Mary-ka **te isang** chayk-ul ilknunta-ko] **mitci** an hanta]
J-TOP M-NOM any more book-ACC read-COMP believe NOT do
'John does not believe that Mary reads the book any more'

(24) a. [CP John-i ku chayk-ul **te isang** ilk-ki ceney]
J-NOM that book-ACC any more read before
Bill-i kukes-ul ilepelyeessta.
B-NOM it-ACC lost
' Before John read the book any more, Bill lost it '

b. *[CP John-i na-eykey [CP Mary-ka **te isang** ku chayk-ul ilknunta-ko]
J-NOM me-to M-NOM any more that book-ACC read-COMP
malha-ki cenye], na-nun tosekwan-ul ttenaessta.
say before, I-TOP library-ACC left
'Before John said to me that Mary read the book any more, I left the library'

(25) a. Na-nun [CP John-i chayk-ul **te isang** ilkessnun-ci] uysimsulepta
I-TOP J-NOM book-ACC any more read-COMP doubt
'I doubt that John read the book any more '

b. *John-un [CP **Mary-ka** [CP Tom-i **te isang** chayk-ul ilknunta-ko]
J-TOP M-NOM T-NOM any more books read-COMP
malhaessnun-ci] uysimsulepta
said-COMP suspect
'John doubts that Mary said that Tom read the book any more'

(26) a. [CP John-i **ku** chayk-ul **te isang ilknunta-myun]**
J-NOM that book-ACC any more read-if
Na-nun kukes-ul Mary-eykey pillyecukeessta.
I-TOP it-ACC M-to will lend
'If John reads the book any more, I will lend Mary the **book'**

b. * [CP John-i [CP Bill-i ku **chayk$_i$-ul te isang** ilknunta-ko] **malha-myun]]**
J-NOM B-NOM that book-ACC any more read-COMP say-if
Na-nun **kukes$_i$-ul** Mary-eykey pillyecukeessta.
I-TOP it-ACC M-to will lend
'If John says that Bill reads the book any more, I will lend Mary the book'

The table below in (27) summarizes the locality of the two types of **NPIs** in Korean.

(27) clause-bound condition	Argument **NPI amwuto(anyone)**	Adverbial NPI te **isang** (any more)
Clausemate negation	Yes	Yes
Before clause	Yes	Yes
Adversative predicate		Yes
Conditional		Yes

Thus, the locality effect (clause-boundness) of the two types of NPIs in Korean as shown in (21-26) and as summarized in (27) motivates one to pursue the syntactic licensing of NPIs in Korean, since the locality effect is typically a syntactic phenomenon. For this, one can simply stipulate that the NPIs in Korean observe clause-bound condition as stated in (20). Or one can deduce this effect from **NPI** movement whose nature has the effect of imposing the locality effect (see Progovac 1994, among others). We will pursue the second option. We suggest NPIs in Korean undergo LF-movement to adjoin to TP, driven by the requirement for the NPI to be adjacent with the licenser **(Lineberger** 1987). The movement is A-movement in nature as assumed in the literature for this type of movement. **(Saito** 1989, among others) Thus the locality effect of NPIs can be directly deduced from the nature of LF-movement of NPIs. Note that NPIs after movement are still in the scope of the licenser as shown in (28).

(28a) is for the conditional, adversative predicate, and before clause, where the licenser is the complementizer heading CP, and **(28b)** is for the negative sentence where the licenser is the negation.

4 Conclusion

To summarize, we proposed that downward entailment is basically a valid semantic licensing condition for **NPIs** in Korean. For the distribution of argument NPI *amwuto* **(anyone),** which can only appear in the negation and before clause, we suggested an elaboration of the notion of downward entailment, **i.e.,** presuppositiondenying downward entailment. Since negation (clausemate) and before clause **are** presuppositiondenying downward entailing environment, argument **NPI** amwuto can appear only in these environments. For the distribution of te isang, we assumed downward entailment in the usual sense. We thus attributed the nonoccurrence of te isang in the relative clause and comparative construction in Korean to the lack of the complementizer. Based on the locality effect (clause-bound condition) of Korean NPIs, we suggested they undergo LF movement, whose driving force is the adjacency requirement of NPIs with the licensers. It was shown that the locality effect could be deduced from the nature of the movement as A-movement into TP position. The licensing condition we suggest for Korean NPIs, both semantic and syntactic, shows that

both Ladusaw's (1980) downward entailment and Linberger's (1987) adjacency requirement are independently required.

Notes

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1. Unlike English counterpart, the argument NPI in Korean is morphologically distinct from the one with a free choice interpretation, which consists of amwu, (N) and *lato* (even) or *na* (even). The abbreviations for glosses used in the examples of this paper are NOM-Nominative Case, ACC-Accusative Case. POSS-Possessive Case, TOP-Topic and COMP-Complementizer.

2. Korean has two types of negation: short form negation (verb preceded by the negator. an) and long form negation (verb stem + *ci* followed by the negator, an). We will use only long form negation for the distribution of NPIs, since their distributions are exactly the same in both the two types of negations.

3. *Amwukesto* (anything) shows the same distribution with amwuto (anyone). Thus we will not include it in the examples.

4. Although slightly marginal te isang can also appear in the at *most* NP and yes -no question and should be clause-bound (see section 3 cf. Lee (1999) and Chung (1993).

a ?/??Kikeshayya se meyng-uy haksayng-i Mary-lul te isang coahanta.
At most three CL-POSS student-NOM M-ACC any more like
'At most three students like Mary any more'

b. ?/??John-i Mary-lul te isang manna-ni?
J-NOM M-ACC any more meet?
'Does John meet Mary any more?'

5. It is controversial whether the conditional is downward entailing. We refer the reader to Heim (1984) and von Fintel (1999) for the conditional.

6. Regarding the notion 'the presupposition of the likelihood scale' we would like to refer the reader to Lee and Horn (1994).

7. It should be noted that non-clausemate negation where negation and an NPI is separated by a clausal boundary is not presupposition-denying downward entailment. As one can see later in section 3, argument NPI *amwuto* (anyone) can appear only in the clause mate negation.

8. Something more should be said regarding what is the relevant complementizer which licenses the NPIs in the adversative predicate and the relative clause headed by the universal quantifier. At this moment, we suggest that the initial complementrizer in the restriction of the relative clause and the complement clause of the adversative predicate act as the relevant licenser.

9. We assume the structure in (28b) for negative sentence since the argument NPI *amwuto* (anyone) in Korean can appear in the subject position too, contra English. For our purpose here, it is immaterial whether Korean projects NegP or not. We will simply assume the structure for convenience sake without necessarily committing ourselves to the existence of NegP.

References

Benmamoun, Elabbas. 1997. 'Licensing of Negative Polarity Items in Moroccan Arabic', Natural Language and Linguistic Theory. 15. 2, 263-287

Chomsky. Noam. 1977. 'On wh-movement', in Peter W. Culicover, Thomas Wasow, and Adrian Akmajian (eds.), *Formal Syntax.* New York, Academic Press.
Chung, Daeho. 1993. 'Negative Polarity Items in Korean: Formal and Distributional Types', ms., University of Southern California.
von Fintel, Kei. 1999. 'NPI Licensing, Strawson-Entailment, and Context-Dependency', to appear in *Journal of Semantics 16.*
Heim, Irene. 1984. 'A Note on Polarity Sensitivity and Downward Entailingness', *Proceedings of NELS*, 14, 98-107.
Hoeksema, Jack. 1983. 'Negative Polarity and the Comparative', *Natural Language and Linguistic Theory*, 1.3.403-434.
Jung, Yeon-Chang, 1990. *Discourse and Recursive Categorical Syntax: A Study of Korean Particles with Focus on Subject.* Doctoral dissertation, University of Washington.
Klima, Edward. 1964. 'Negation in English', in J. Foder and J. Katz (eds.), *The Structure of language.* Englewood Cliffs, Prentice-Hall.
Ladusaw. William. 1980. *Polarity Sensitivity as Inherent Scope Relations.* New York, Garland.
Laka, Itziar. 1990. *Negation in Syntax: On the Nature of Functional Categories and Projections.* Doctoral dissertation, MIT.
Lee, Chungmin. 1999. 'Types of NPIs and Nonveridicality in Korean and other Languages', in G. Storto (ed.), *UCLA Working Papers in Linguistics, 3.* 96-132.
Lee, Kwee-Ock. 1991. *On the First Language Acquisition of Relative Clauses in Korean: The Universal Structure of COMP.* Doctoral dissertation, Cornell University.
Lee, Young-Suk. 1993. 'The semantics of ANY Revisited', *Proceedings of NELS*, 23, 287-301.
Lee, Young-Suk, and Lawrence, Horn. 1994. 'Any as Indefinite plus Even', ms., Yale University, New Haven.
Linebarger, Marcia 1987. 'Negative Polarity and Grammatical Representation', *Linguistics and Philosophy.* 10, 325-387
Progovac, Ljiljiana. 1994. *Negative and Positive Polarity: A Binding Approach.* Cambridge University Press.
Reinhart, Tanya. 1976. The *Syntactic Domain of Amphora.* Doctoral dissertation, MIT.
Suh. Chengsoo, 1994. *Modern Korean Grammar.* Deep-Rooted *Tree* Publishing House, Seoul.
Zwarts, Frans. 1998. 'Three Types of Polarity', in F. Hamm and E. Hinrichs (eds.), *Plurality and Quantification.* Dordrecht, Kluwer Academic Publishers.

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A Multiple Inheritance Approach to Postverbal-Dislocation Constructions in Korean*

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1. Introduction

This paper examines Postverbal-Dislocation Constructions (PDCs hereafter) in Korean, commonly called afterthought or inversion constructions (Kuno 1978, Choe 1987, Whitman 1991, Yoo 1992, among others). Korean has canonical word order of SVO and is one of the typical head final languages. However, in the PDCs, the arguments of a verb occur at the postverbal position, as shown in (1b,c,d):

(1) a. Mary-ka ku chayk-ul ilkessta.
M-Nom the book-Acc read
'Mary read the book.'
b. Mary-ka ilkessta, ku chayk-ul.
c. Ilkessta, Mary-ka ku chayk-ul.
d. Ilkessta, ku chayk-ul Mary-ka.

Even though this pattern is prevalent in casual speech, little attention has been paid to its analysis so far.

One of the interesting properties of Korean PDCs is that they share the properties of both scrambling and topic. The main goal of this paper is to account for the mixed properties of the PDCs.

2. Properties of the PDCs

2.1. Scrambling related properties

The PDC has a scrambling property in a sense that it meets the Condition on Extraction Domain, i.e., an element cannot be extracted to the postverbal position out of a complex NP or a sentential subject, as shown in (2a). Note that scrambling out of such constituents is also not allowed as in (2b).

(2) a. postverbal dislocation out of a complex NP

(2) a. postverbal dislocation out of a complex NP

* Mary-ka [NP [S ___$_i$ an pon] salam-ul]
M-Nom not see person-Acc
mannaci mos hayssta, ku yenghwa-lul$_i$.
meet not did the movie-Acc
'Mary did not meet anyone who did not watch the movie.'

b. scrambling out of a complex NP

* Ku yenghwa-lul$_i$ Mary-ka [NP [S ___$_i$ an pon] salam-ul]
the movie-Acc M-Nom not see person-Acc
mannaci mos hayssta.
meet not did

In contrast, **(3)** shows that both scrambling and postverbal dislocation are possible out of a complement clause:

(3) a. postverbal dislocation out of a complement clause

Mary-ka [S John-i ___$_i$ ilkesstako] sayngkakhayssta, ku chayk-ul$_i$.
M-Nom J-Nom read thought the book-Acc
'Mary thought that John read the book.'

b. scrambling out of a complement clause

Ku chayk-ul$_i$, Mary-ka [S John-i ___$_i$ ilkesstako] sayngkakhayssta.
the book-Acc M-Nom J-Nom read thought

Another interesting fact about the parallelism between scrambling and PDC constructions is scope licensing of a Negative Polarity Item (NPI), e.g., amwuto 'anyone'. Based on the examples in (4), Choe 1987 proposes that amwuto must be a clause mate of its licensor, the negative predicate -ci anh assta:

(4) a. John-un [amwuto o-ci anh assta-ko] sayngkakhayssta.
J-Nom anyone come not did-COMP thought
'John thought that no one came.'

b. * John-un [arnwuto oassta-ko] sayngkakhayssta.
J-Nom anyone came-COMP thought
'*John thought that anyone came.'

c. ??John-un [amwuto oassta-ko] sayngkakha-ci anh assta,
J-Nom anyone came-COMP think not did
'John did not think that anyone came.'

(4c) is unacceptable because amwuto does not have a clause-mate negative predicate. However, (5) below shows that the same sentence gets much better when amwuto is dislocated to the postverbal position:

(5) John-un [___$_i$ oassta-ko] sayngkakha-ci anh-assta, amwuto$_i$.
J-Nom came-COMP think not-did anyone
'John did not think that anyone came.'

Note that long-distance scrambling of an NPI can also ameliorate a violation of the clause-mate constraint, as shown in ***(6)*** (Suh 1990):

(6) Amwuto$_i$ John-un [__$_i$ oassta-ko] sayngkakha-ci anhassta.
anyone J-Top came-COMP think not-did
'John did not think that anyone came.'

However, postverbal dislocation differs from scrambling in a sense that the so-called root phenomenon occurs only in the PDCs, i.e., the postverbal dislocation does not occur within an embedded clause as shown in (7a). (7b), in contrast, shows that scrambling can occur within an embedded clause.

(7) a. postverbal dislocation within an embedded clause
* Mary-ka [$_S$ John-i poasstako, ku yenghwa-lul] sayngkakhayssta.
M-Nom J-Nom saw the movie-Acc thought
'Mary thought John watched the movie.'

b. scrambling within an embedded clause
Mary-ka [$_S$ ku yenghwa-lul John-i poasstako] sayngkakhayssta.
M-Nom the movie-Acc J-Nom saw thought

PDC's root phenomenon, however, does not occur when the postverbal element is dislocated from an already dislocated embedded clause:

(8) Mary-nun __$_i$ sayngkakhayssta, [John-i __$_i$ poasstako]$_i$,
M-Top thought J-Nom saw'
ku yenghwa-lul$_j$.
the movie-Acc
'Mary thought John watched the movie.'

2.2. Topic related properties

The Korean PDC is also similar to the Chinese-style topic construction in a sense that it allows a resumptive pronoun (Saito 1985 and Whitman 1991), as shown in (9a). In contrast, (9b) shows that the resumptive pronoun is not allowed in scrambling.

(9) a. postverbal dislocation with a resumptive pronoun
Na-nun [$_S$ Mary-ka ku-lul$_i$ cohahantako] sayngkakhayssta, John-ul$_i$.
I-Top M-Nom he-Acc like thought J-Acc
'I thought that Mary liked John.'

b. scrambling with a resumptive pronoun
* John-ul$_i$ na-nun [$_S$ Mary-ka ku-lul$_i$ cohahantako] sayngkakhayssta.
J-Acc I-Top M-Nom he-Acc like thought

Another PDC's property shared with a topic is that a postverbal element cannot be a wh-phrase as shown in (10a). (10b) shows that a wh-phrase cannot be used as a topic:

(10) a. postverbal dislocation with a wh-phrase
* Mary-ka __$_i$ mekess-ni, mwuess-ul$_i$?
M-Nom ate-Q what-Acc
'What did Mary eat?'

b. topic with a wh-phrase

* Mwuess-un$_i$ Mary-ka ___$_i$ mekess-ni?
what-Top M-Nom ate-Q

Also note that the postverbal or topic phrase cannot be an answer to a *wh*-question as shown in (11):

(11) A: Mary-ka mwuess-ul mekess-ni?
M-Nom what-Acc ate-Q
'What did Mary eat?'

B: a. * Mary-ka ___$_i$ mekessta, sakwa-lul$_i$.
M-Nom ate apple-Acc
'Mary ate an apple.'

b. * Sakwa-nun; Mary-ka ___$_i$ mekessta.
apple-Top M-Nom ate

The examples such as (10) and (11) suggest that the postverbal phrase does not bear information focus.

However, the PDC differs from the Korean or Chinese topic construction in some other respects. The topic in Korean is generally interpretable as an element within an adjunct or a complex NP, as long as the topic and the comment clause satisfy the "aboutness condition" (Kuno 1973) as shown in (12a). However, (12b) shows that this kind of interpretation is not allowed in the PDC.

(12) a. Ku yenghwa-nun$_i$ Mary-ka [$_{NP}$ [$_S$ ___$_i$ an pon] salam-ul]
the movie-Top M-Nom not see person-Acc
mannaci mos hayssta.
meet not did
'As for the movie, Mary did not meet anyone who did not watch it.'

b. * Mary-ka [$_{NP}$ [$_S$ ___$_i$ an pon] salam-ul]
M-Nom not see person-Acc
mannaci mos hayssta, ku yenghwa-lul$_i$.
meet not did the movie-Acc

3. Previous Analyses

Kuno 1978 and Saito 1992 propose that a postverbal element be restricted to either an element which can be deleted without any substantial change in the meaning of the sentence or an element which represents supplementary information, and that the postverbal dislocation phenomenon is just a stylistic matter and does not involve any syntactic extraction. Problems with these non-syntactic approaches lie in the facts about the syntactic constraints such as the Condition on Extraction Domain (e.g., (2) and (3)) and root phenomenon (e.g., (7) and (8)).

Based on the observation on the scope facts in (4) and (5), Choe 1987 proposes that postverbal dislocation is a syntactic scope assignment process that

affects the scope of an NPI. However, the NPI scope change through postverbal dislocation does not necessarily entail that postverbal position should be a scope assignment position for quantifiers in general. Let us consider the examples in (13):

(13)a. Nwukwuna sey ene-lul malhanta.
everyone three language-Acc speak
'Everyone speaks three languages.' (every > three; *three > every)

b. Sey ene-lul nwukwuna malhanta.
three language-Acc everyone speak (every > three; three > every)

c. Nwukwuna malhanta, sey ene-lul.
everyone speak three language-Acc (every>three;*three > every)

The examples like (13a, b) are generally used in arguing that scrambling can affect the scope of quantifiers in Korean and Japanese. However, as shown in (13c), "three languages" cannot scope over "everyone" when "three languages" is located at the postverbal position. This invalidates Choe's proposal that the postverbal position is a scope assignment position.

Based on Hindi's postverbal dislocation constructions and the notion of "c-command", Mahajan 1997 proposes that the postverbal element does not move rightward but is stranded at its original position while non-postverbal elements such as the head verb and its governed arguments move leftward. However, it is not clear how this approach can explain the NPI scope (e.g., (5)) and amelioration of the root phenomenon (e.g., (7) and (8)).

4. A New Analysis

In order to account for the given facts, this paper proposes a new analysis under the framework of Head-Driven Phrase Structure Grammar (Pollard and Sag 1994, and Bouma et al. in press). This paper adopts the version developed by Bouma et al. where various extraction phenomena are uniformly accounted for without the assumptions of trace and lexical rules.

4.1. EXTRA feature and multiple inheritance hierarchy

Bouma et al. propose that a gap has the feature structure in (14), which states that the LOC value of a gap-ss element corresponds to its SLASH value.

(14)

Gap-sss exist only on the list of dependents of the lexical head which selects them.

We introduce two new features for Korean, TOPIC and EXTRA(position),

which belong to the PERI(PHERY) feature. They are responsible for the license of the left and right peripheral positions, respectively, the topic and postverbal positions.

(15)
$$\begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & [1] \\ \text{COMPS} & [2] \end{bmatrix} \\ \text{PERI} & \begin{bmatrix} \text{TOPIC} & [3] \\ \text{EXTRA} & [4] \end{bmatrix} \end{bmatrix}$$

In order to handle the PDCs, the constraint on *head-filler* phrase in Bouma et al. needs a slight change into (16):

(16)
$$\textit{hd-peri-ph} \Rightarrow \begin{bmatrix} \text{SUBJ} & \square \\ \text{SLASH} & [2] \cup [3] \\ \text{HD-DTR} & [\text{SLASH } [2] \cup \{[1]\}] \\ \text{NON-HD-DTRS} & \begin{bmatrix} \text{CAT} & [1] \\ \text{SLASH} & [3] \end{bmatrix} \end{bmatrix}$$

(16) states the following: the SLASH value of head-extra phrase is the SLASH value of the head daughter minus the extra daughter plus the SLASH value of the extra daughter.'

(17) is the argument realization constraint in Bouma et al, which defines the relationship between dependents and valence, stating that the elements on DEPS that are of type *gap-ss* (gap-synsem) must be absent from the COMPS list.

(17) Argument Realization
$$\textit{word} \Rightarrow \begin{bmatrix} \text{SUBJ} & [1] \\ \text{COMPS} & [2] \ominus \textit{list}(\textit{gap-ss}) \\ \text{DEPS} & [1] \oplus [2] \end{bmatrix}$$

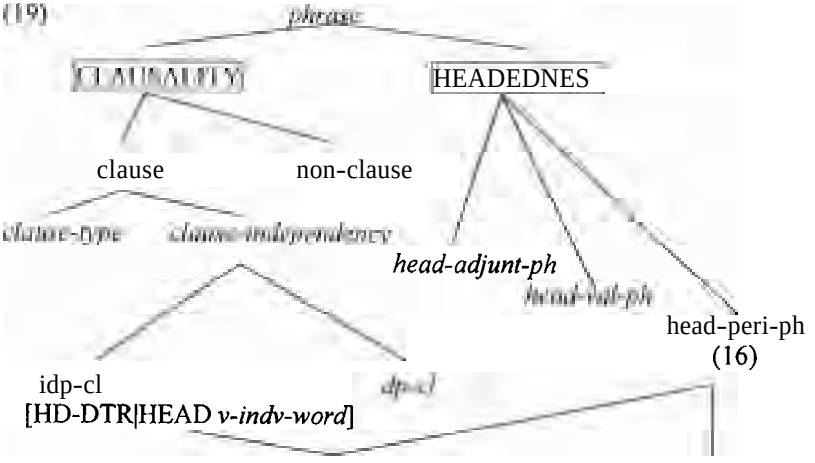
We also need LP constraint (18a) to specify that the element of the EXTRA value linearly follows the head daughter.

(18) a. [EXTRA <SYNSEM[1]>] $\prec$ SYNSEM[1]

b. SYNSEM [1] $\prec$ [$\neg$ EXTRA [1]>]

(18b) specifies the head finality of Korean in a sense that the elements other than the EXTRA value, such as the subject, complement, and topic, precede their governing element.

Following Sag 1997 and Ginzburg and Sag 1999, the present analysis assumes the multiple construction type inheritance hierarchy that is used to capture the fact that instances of some construction types seem to resist being uniquely categorized in a natural way. This paper proposes the multiple construction type inheritance hierarchy in (19) to account for some of the mixed properties of the Korean postverbal construction:



$$\begin{bmatrix} \text{HD-DTR} \mid \text{EXTRA} \{[1]_{[2]}\} \\ \text{INFO-STR} \mid \text{GROUND} \mid \text{TAIL} [2] \end{bmatrix}$$

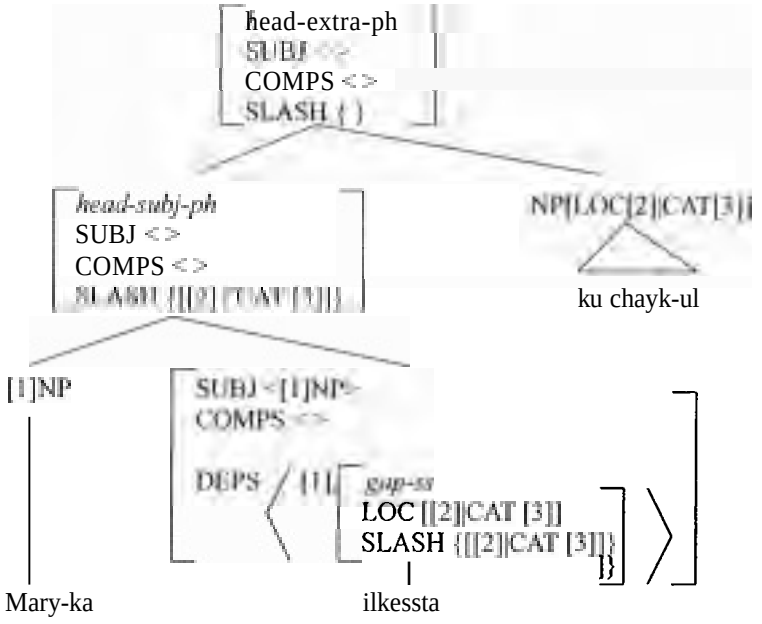
According to this hierarchy, type head-extra-ph itself has only one constraint: the index value of the head daughter's EXTRA value carries one type of the ground information, tail, and thus does not bear focus. Also, note that head-extra-ph is a subtype of independent-clause (idp-cl) and head-peri-ph. The constraints on idp-clause and head-peri-ph are inherited by head-extra-ph. The constraint on idp-cl states that the head verb must be sort v-individual-word which has a MOOD value such as declative (e.g. *-ta*), question (e.g. *-kka*), or proposative (e.g. *-ca*) (Kim 1994). The constraint on head-peri-ph is stated in (16).

The rest of this section shows how the aforementioned constraints and multiple inheritance hierarchy account for the data given in section 2.

4.3. Consequences

The structure in (20) below shows how the proposed analysis accounts for the simple example in (1b). Here the object of *ilkessta*, ku *chayk-ul*, is the gap-ss, and it is realized as an element of the DEPS value. The SLASH value of the gap-ss is percolated up by the SLASH Amalgamation constraint (Bouma et al. in press) and discharged by the head-peri-ph constraint in (16).

(20)



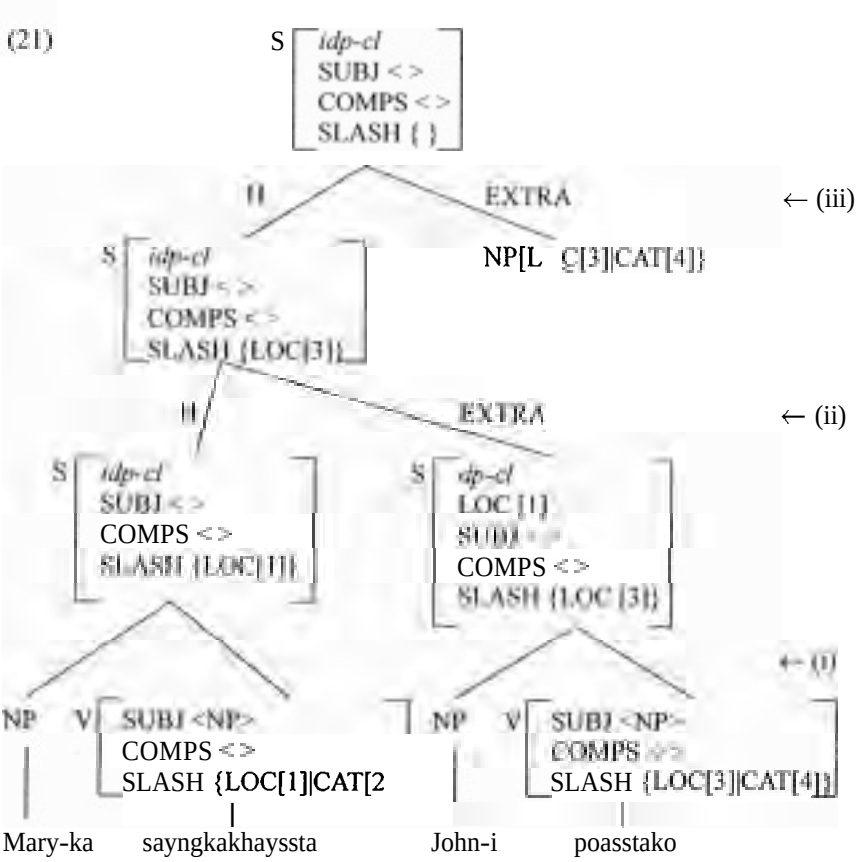
4.3.1. Wh-phrases

Following Kaiser 1998, the postverbal element is assumed to carry the tail information that belongs to the ground information (i.e., bottom of (19)), in terms of Engdahl and Vallduvi. 1996. This constraint simply accounts for the examples in (10) and (I l) where the postverbal phrase cannot be a wh-phrase or an answer to a wh-question. The wh-phrase or its answer is generally assumed to bear focus information.

4.3.2. Root phenomenon

As shown in (7), a postverbal phrase is allowed only in an independent clause. The inheritance hierarchy in (19) straightforwardly accounts for the contrast between (7a) and (8). Sentence (7a) is not licensed simply because the *head*-extra-ph is not a subtype of dependent (embedded) clause but a subtype of an independent clause. In other words, the head daughter of head-extra-ph must be sort v-individual-word that carries MOOD value. In (7a), however, the head of the embedded verb carries a COMP value (-ko in poassrako) instead of the MOOD value.

In contrast, sentence (8)—where the embedded clause is extracted to the postverbal position, and an NP is extracted out of the already extracted embedded clause—has the following structure:



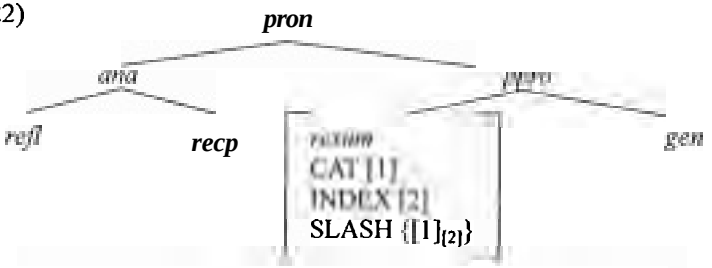
Nothing is wrong with local tree (i). Even though the dependent clause has a non-empty SLASH value, no constraint is violated here because a postverbal non-head daughter does not exist there. Note that the inheritance hierarchy states that only an independent clause can have such a daughter, but it does not entail that a dependent clause must have an empty SLASH value. Local trees (ii) and (iii) are the structures, each of which is an independent clause that has a postverbal non-head daughter.

4.3.3. ***Resumptive*** Pronoun

Following **Pollard** and Sag's 1994 sort hierarchy of **NPs,** this paper assumes the sort hierarchy in (22) for the pronominal objects. Here new sorts of resumptive-pronoun **(*resum*)** and genuine-pronoun (gen) are introduced. The sort ***resum*** is similar to ***gap-ss*** in that it has its own SLASH value. A difference is that the SLASH value is structure shared with only the resumptive pronoun's CAT and INDEX values, not with its whole LOC value. Note that the antecedent is ***non-***

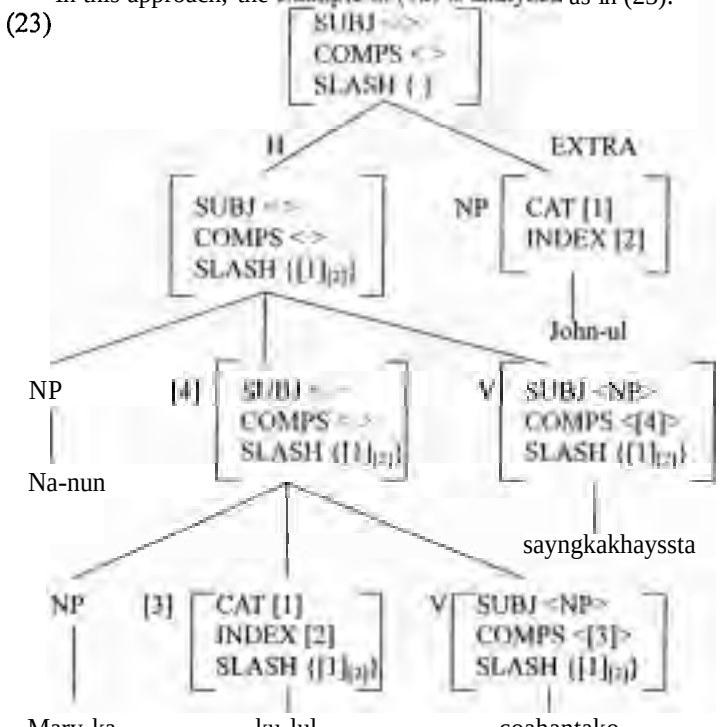
pronoun (R-expression in terms of GB), and thus they cannot have the identical **LOC** value.

(22)



In this approach, the example in (9a) is analyzed as in (23):

(23)



In contrast, the long-distance scrambled sentence in (9b) does not allow a resumptive pronoun because scrambling itself is not licensed by the ***head-periph*** in my analysis, and thus it cannot discharge the non-empty **SLASH** value that is originated by the resumptive pronoun. The long-distance scrambling mechanism is illustrated in section 4.3.4 below.

4.3.4. Long-Distance Scrambling and NPI Scope

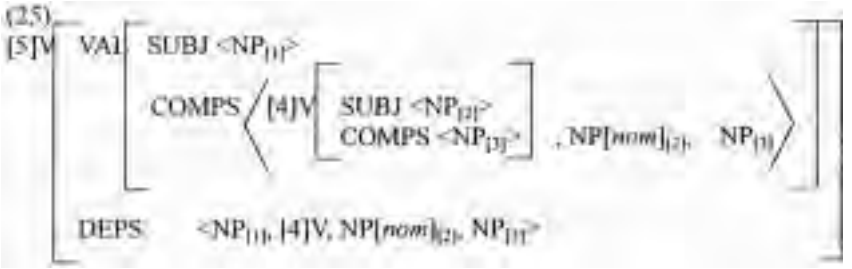
Following Chung 1998, this paper proposes that long-distance scrambling in Korean is licensed by the argument composition mechanism (Hinrichs and Nakazawa 1994) that is similar to raising in GB, i.e., an element not discharged within an embedded clause is inherited by the main clause. This approach proposes that a sentence with an S-complement has two structures, i.e., one with an embedded S-complement constituent (e.g., (24a)), and the other with a liberated S-complement through argument composition (e.g., (24b)).

(24) a. [$_S$ John-i [$_S$ Mary-ka ku chayk-ul ilkesstako] sayngkakhayssta].
J-Nom M-Nom the book-Acc read thought
'John thought that Mary read the book.'

b. [$_S$ John-i Mary-ka ku chayk-ul ilkesstako sayngkakhayssta].
J-Nom M-Nom the book-Acc read thought

According to Bouma et al., the relation between the DEPS feature and valence feature is stated as in (17), i.e., the value of the DEPS is the SUBJ list plus the COMPS list plus. In this approach, the matrix verb sayngkakhayssta of the liberated sentence in (24b) has the structure in (25) where the arguments of the embedded verb ilkesstako are inherited by the COMPS list of the matrix verb, and its DEPS value is a collection of list of VAL values, including the arguments inherited through argument composition.[2, 3]

(25)

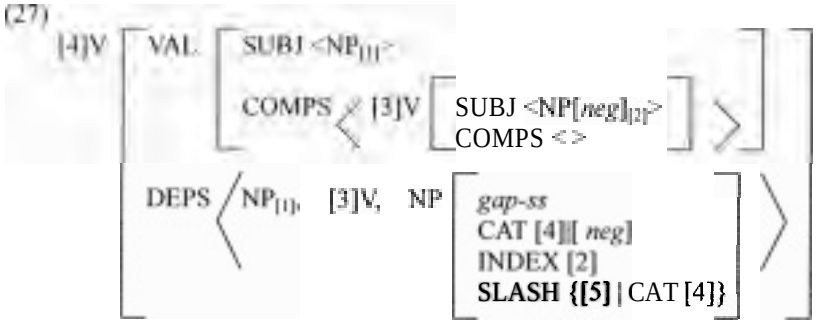


Our account of long-distance scrambling through argument composition naturally predicts the facts about the NPI scope if we reinterpret the clause-mate constraint in the following way:

(26) An NPI must be a DEPS value of its licensor.

In this approach, the feature structure of VAL and DEPS of the verbal-complex NPI licensor *sayngkakhaci anh assta* "did not think" in (5) are as in (27), where the postverbal NPI is realized as a *gap-ss* in the DEPS value, and thus the condition in (26) is satisfied.[4]

(27)



5. Conclusion

An advantage of the present analysis is that the notion of multiple type inheritance induces interactions of the given constraints, and thus that the mixed properties of the PDC are naturally accounted for. Also it provides a preliminary HPSG tool for Korean peripheral position phenomena through the proposal of the new peripheral features, TOPIC and EXTRA

Notes

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1. (16) differs from the head-filler phrase in Bouma et al. in that the SLASH value can be discharged when the SLASH value and the EXTRA daughter's CAT value, not their whole LOCAL values, are identical. The reason is presented in section 4.3.3, where resumptive pronouns are discussed.

2. However, we assume that argument-structure (ARG-ST) value is not affected by argument composition since it does not affect the binding theory. To this end, the constraint on the ARG-ST in Bouma et al. needs to be assumed to be a default specification. and thus it can be overridden bv a construction specific argument composition constraint. That is, the argument composition constraint specifies that the valence feature changes do not affect the value of the AGR-ST.

3. Also note that argument composition occurs only between the verbal categories in head-complement relations, and thus long-distance scrambling does not occur beyond the boundary of an adjunct or NP (e.g., (2b) vs. (3d)).

4. The flat structure version of (4c), where the word order is the same as (4c) but the embedded S boundary is eliminated, would seem to be problematic. In this structure, the NPI is inherited to the COMPS value of the licensor and then becomes one of its DEPS values. Then the condition in (26) is satisfied, and hence the sentence is incorrectly predicted to be acceptable. In our approach, the flattened version of (4c) is awkward due to a processing factor. This claim is supported by the fact that (4c) becomes much better when the NPI is stressed and when a short pause is put between the NPI and the embedded verb, as shown in (i):

(i) John-un AMWUTO, oassta-ko sayngkakha-ci anh assta,
J-Nom anyone came-COMP think not did
'John did not think that anyone came.'

Here the pause plays the role of blocking the processing interference by phonologically separating the NPI from the embedded verb and thus preventing *amwuto o-asstako* from being interpreted as a unit.

References

Bouma, G., R. Malouf and I. Sag. In press. "Satisfying constraints on extraction and Adjunction", *Natural Language and Linguistic Theory*.

Cho, J-H. 1994. "On scrambling: reconstruction, crossover and anaphor binding", *Theoretical Issues in Korean Linguistics:* 255-274. Stanford: CSLI.

Choe, H. S. 1987. "Successive-cyclic rightward movement in Korean", *Harvard Studies in Korean Linguistics, 2:* 40-57.

Chung, C. 1998. "Argument composition and long-distance scrambling in Korean: an extension of the complex predicate analysis", *Complex Predicates in Non-Derivational Syntax*. Syntax and Semantics, 30: 159-220.

Engdahl, E. and E. Vallduví. 1996. "Information packaging in HPSG", *Edinburgh Working Papers in Cognitive Science, 12:* 1-31.

Ginzburg, J. and I. Sag. 1999. *English Interrogative Constructions*. Hebrew University and Stanford University.

Hinrichs, E. and T. Nakazawa. 1994. "Linearizing AUXs in German verbal complexes", *German Grammar in HPSG:* 11-*37*. Chicago: University of Chicago Press.

Kaiser, L. 1998. "Representing the structure-discourse iconicity of the Japanese post-verbal construction", *Functionalism & Formalism in Linguistics*. Amsterdam: Benjamins.

Kim, J-B. 1994. "A constraint-based lexical approach to Korean verb inflections", Presented at the 2nd international HPSG workshop held

Kuno, S. 1973. *The Structure of Japanese Language*. Cambridge: MIT Press.

Kuno, S. 1978. "Japanese: a characteristic OV language", *Syntactic Typology*. Austin: University of Texas Press.

Mahajan, A. 1997. "Rightward scrambling", *Rightward Movement:* 186-213. Amsterdam: John Benjamin Publishing Company.

Pollard, C. and I. Sag. 1994. *Head-Driven Phrase Structure Grammar*. University of Chicago press and CSLI publications.

Sag, I. 1997. "English relative clause constructions", *Journal of Linguistics*, 33: 431-484.

Saito, M. 1992. "Long distance scrambling in Japanese", *Journal of East Asian Linguistics*, 1. 69-118.

Saito, M. 1985. *Some Asymmetries in Japanese and their Theoretical Implications*. Ph.D. Dissertation. MIT.

Suh, J-H. 1990. *Scope Phenomena and Aspects of Korean Syntax*. Ph.D. Dissertation. University of Southern California.

Whitman, J. 1991. "Rightward movement in verb final languages". Presented to Dokkyo International Symposium. December 20, 1991.

Xu, L. and T. Langendoen. 1985. "Topic structures in Chinese", *Language*, 61. 1-27.

Yoo, E. J. 1992. "Two kinds of inversion in Korean". Ohio State University.

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The Syntactic Locus of Futurate Meaning*

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1. Introduction

A *futurate* is a sentence with a future-oriented eventuality, which is acceptable only when the eventuality is plannable:

(1) a. The Red Sox are playing the Devil Rays tomorrow.
b. * The Red Sox are beating the Devil Rays tomorrow.

Traditionally (Lakoff 1971, Prince 1973, Vetter 1973, Dowty 1979), the example in (1b) is bad to the extent that no one can plan for the Red Sox to beat the Devil Rays tomorrow; it improves under the "mafia reading", in which someone has fixed the game and the result has been planned ahead of time. It is also possible to improve (1b) under an extreme confidence on the part of the speaker that the Red Sox will win the game. As it is not clear to me whether the planned reading should be subsumed under the rubric of this confidence reading, I will continue to speak in terms of planning, though we should keep in mind that there can be futurate sentences that do not involve planning and where confidence is all that matters (e.g., *The sun is rising tomorrow at 6:30*). I suspect that there will turn out to be only a pragmatic difference between the two (in which case they would not be properly termed different readings). But even in the absence of a real theory of the pragmatic conditions under which futurates can be used, we can still ask questions about the syntax of futurates. The questions I would like to ask here are: Does this sensitivity to plannability have a syntactic location? If so, where is it? I will claim that this component of the meaning of progressive futurates does have a syntactic location, and that this position is the same as the position of the progressive operator. As an initial hypothesis, we take the "plan" or "confidence" component to be realized as a covert operator. Let's call this unpronounced hypothetical operator "PLAN", In section 2 we will establish a lower bound for the position of PLAN, using

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evidence from the position of temporal adverbials and the possibility for futurate readings in gerunds. Section 3 establishes an upper bound, by way of temporal adverbial tests. The evidence in sections 2 and 3 indicate a position between PROG and the VP; in section 4 I discuss a problem for this analysis that is apparently raised by manner adverbial data, and how the problem might be solved, namely by saying that Plan is actually the progressive operator. I further discuss some consequences of this move.

2. Establishing a Lower Bound

In this section, temporal adverbial and gerund evidence allow us to establish a lower bound of the VP boundary for the position of the hypothetical futurate operator PLAN.

2.1 Position of temporal adverbials

Temporal adverbials can appear both clause-initially and clause-finally in futurates. Each position is associated with a particular time: the high adverbial constrains the time at which the plan is asserted to hold, and the low adverbial constrains the time at which the planned event is scheduled to take place. These positions cannot be switched (e.g., (2b) cannot be used to express what (2a) expresses).

(2) a. Yesterday, the Red Sox were playing the Yankees tomorrow.
high adverbial: low adverbial
plan time event time
b. *Tomorrow, the Red Sox were playing the Devil Rays yesterday.

Assuming unselective binding by temporal adverbials, this means that the plan time is bound higher than the position of the lower adverbial. Where is this lower adverbial? VP-fronting evidence indicates that it is part of the VP:

(3) VP-fronting
a. Mary said the Devil Rays are playing tonight, and [playing tonight] they are.
b. *Mary said the Devil Rays are playing tonight, and [playing] they are tonight.

If we also assume that our hypothetical PLAN operator introduces the time at which the plan is asserted to hold, we may conclude that PLAN is located higher than the VP.

2.2 Gerunds

Gerund evidence also puts PLAN higher than the VP, as there turns out to be a correlation between the possibility for futurate readings and how much inflectional structure there is in the gerund.

There are three kinds of English gerunds, which have been argued (Horn 1975, Reuland 1983, Abney 1987) to contain different subsets of the entire range of verbal and Infl projections. "Acc-ing" gerunds assign accusative case to their subjects. The other two, "poss-ing" and "ing-of," assign genitive case to their subjects. Ing-of gerunds in addition require their theme to be an of phrase.

(4)
a. acc-ing:
John singing the Marseillaise
b. poss-ing:
John's singing the Marseillaise
c. ing-of:
John's singing of the Marseillaise

Acc-ing gerunds are larger than poss-ing gerunds, he argues, since the former share various properties with sentences which poss-ing gerunds do not share:

(5) inanimate subjects ok
a. We were very upset that the refrigerator tipped over.
b. We were very upset at the refrigerator tipping over.
c. ?We were very upset at the refrigerator's tipping over.

(6) no pied piping where subject is +wh
a. * the man [(for) who to leave early] you would have preferred
b. *the man [whose flirting with your wife] you took such exception to
c. the man [whose flirting with your wife] you took such exception to

(7) no wide scope for subjects
a. John is mad that everyone took a day off (*wide)
b. John disapproves of everyone taking a day off (*wide)
c. John disapproves of everyone's taking a day off (wide ok)

However, the fact that poss-ing gerunds can assign accusative case to a direct object is a reason to grant poss-ing gerunds at least a VP. In fact, poss-ing gerunds, like acc-ing gerunds (but unlike ing-of) are evidently large enough to have aspectual morphology, as below:

(8) a. Sue having eaten sardines
b. Sue's having eaten sardines
c. * Sue's having eaten of sardines

Let us assume, then, that acc-ing gerunds and poss-ing gerunds have a full VP and at least some inflectional projections, but that ing-of gerunds have no verbal

projections higher than V. As a consequence, given our results in the last section we would expect PLAN to be able to appear in acc-ing and poss-ing, but not in ing-of gerunds.' This is expected because PLAN is located syntactically just above VP, thus structures with at least a VP should be able to host PLAN.

This prediction is borne out: we do see futurate readings in acc-ing and poss-ing, but not in ing-of gerunds. Compare (10), (11), and (12) to the judgments in (9). (9a) and (9b) exemplify the futurate in matrix clauses, where plannable eventualities (as in (9a)) are judged good and unplannable ones (as in (9a)) are not.

(9) matrix
  a. John is suddenly singing "Silent Noon" next year.
  b. *John is suddenly liking vegetables next year.

(10) acc-ing
  a. What with John suddenly singing "Silent Noon" next year, Mary was surprised.
  b. * What with John suddenly liking vegetables next year, Mary was surprised.

(11) poss-ing
  a. John's suddenly singing "Silent Noon" next year surprised Mary.
  b. * John's suddenly liking vegetables next year surprised Mary.

(12) ing-of
  a. * John's sudden singing of "Silent Noon" next year surprised Mary.
  b. *John's sudden liking of vegetables next year surprised Mary.

And for further comparison, DPs without gerunds:

(13) non-gerund DPs
  a. * John's sudden performance of "Silent Noon" next year surprised Mary.

  b. *John's sudden love of vegetables next year surprised Mary.

What we see is that acc-ing and poss-ing gerunds with a future-oriented adverbial are much more acceptable when the eventuality is plannable (such as singing, cf. (1a)) than when it is not plannable (such as liking, cf. (1b)). Ing-of gerunds behave like nouns, in that future-oriented adverbials are bad with both

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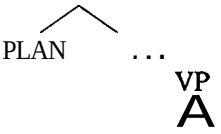
[1] The fact that the gerund-forming affix is *-ing* is not terribly informative in a language with as little morphology as English; generally it is treated as distinct from the progressive *-ing* affix, and a brief cross-linguistic survey shows that it is indeed accidental homophony.

plannable and unplannable eventualities. This supports the idea that PLAN is located just above VP; ing-of gerunds, without VP, are not large enough to have a PLAN Phrase (PLANP), so they do not have futurate readings.

Thus we have a lower bound for PLAN (with the dots indicating that we do not know just how much higher than VP PLAN is):

(14) lower bound established: PLAN higher than VP



3. Establishing an Upper Bound

In this section we establish an upper bound for the location of PLAN. Temporal adverbial tests appear to show that PLAN is somewhere below the progressive operator.

3.1 Temporal adverbials

Punctual temporal adverbials (at noon, etc.) yield ongoing readings with progressive VPs, and completive and inchoative readings with perfective VPs. The ongoing reading is the one in which at noon, the event is in the process of occurring, as in the progressive (non-futurate) example in (15):

(15) John was eating sardines at noon.

The completive reading is one in which the whole event is viewed as taking place at noon. The inchoative reading is one in which the event is viewed as starting at noon. In (16), the most natural reading is the inchoative reading, where the eating starts at noon, but also possible is the implausible completive reading, in which the eating lasts a minute or less.

(16) John ate sardines at noon.

Ongoing and completivdinchoative readings can be distinguished by their ability to appear in conjunction with then-clauses and still-clauses (on the temporal readings of then and still). Still-clauses can be conjoined with ongoing sentences but not completivdinchoative ones, as in (17a) and (18a). Then-clauses are a bit marked with ongoing sentences, but may. be conjoined with completive/inchoative ones, as in (17b) and (18b). Anaphora is indicated by boldface:

(17) ongoing reading
   a. John was eating sardines **at noon,** and was **still** eating sardines at 12:05.
   b. ?John was eating sardines **at noon,** and **then** he took a nap.

(18) completive/inchoative readings

   a. * John ate his sardines **at noon,** and **still** ate his sardines at 12:05. (bad on relevant reading)
   b. John ate his sardines **at noon,** and **then** he took a nap.

Although for many speakers, (17b) is possible, it nonetheless does not sound as natural as (18b).

3.2 Temporal adverbials in futurates

As we saw above in section 1.1, futurates can have "incompatible" temporal adverbials; the high one constrains the time of the plan, and the low one constrains the time of the eventuality. For example, (19) says that at noon there was a plan for the Red Sox to play the Yankees at 6:00 (and can not mean that there was a plan at 6:00 for them to play at noon).

(19) At noon. the Red Sox were playing the Yankees at 6:00 pm.

Our method for the time being is as follows: treat ***still*** and ***then*** as anaphoric to either the high adverbial or the low adverbial, and test for the presence of ongoing or completive/inchoative readings. With ***still*** and ***then*** anaphoric to a high punctual adverbial, we see that only the ongoing reading for the plan is available, since (20a) is good and (20b) is bad. Now consider the cases where ***still*** and ***then*** are anaphoric to a low punctual adverbial, in (21). The fact that the ***still*** conjunction in (21a) is good tells us that an ongoing reading is possible; the fact that the ***then*** conjunction in (21b) is good indicates that a completive/inchoative reading is possible.

(20) high adverbial (time of plan): ongoing
   a. **At noon,** the Red Sox were playing the Yankees at 6:00 pm, and at 12:05, they were **still** playing the Yankees at 6:00 pm.
   b. ***At noon,** the Red Sox were playing the Yankees at 6:00 pm, and **then** they all went out for ice cream.

(21) low adverbial (time of eventuality): completive/inchoative, ongoing
   a. At noon, the Red Sox were playing the Yankees **at 6:00 pm,** and they were **still** playing the Yankees at 6:05.

b. At noon, the Red Sox were playing the Yankees at 6:00 pm, and then they were playing the Mariners at 8:30pm.

When-clauses are similar to punctual adverbials: in general they yield ongoing interpretations with progressives, and inchoative or completive readings with perfectives.

(22) a. When I talked to John, he was eating sardines, and he was still eating sardines three days later.
b. *? When I talked to John, he was eating sardines, and then he took a nap.

(23) a. * When I talked to John, he ate sardines, and he was still eating sardines three days later.
b. When I talked to John, he ate sardines, and then he took a nap.

Again, temporal anaphora on a high when-clause shows that the plan is ongoing. With the anaphora on a low when-clause, we see that the eventuality may receive an inchoative, completive, or ongoing reading:

(24) high adverbial (time of plan): ongoing
a. When I talked to Pedro, the Red Sox were playing the Yankees at 6:00 pm, and when I talked to Nomar, they were still playing the Yankees at 6:00 pm.
b. * When I talked to Pedro, the Red Sox were playing the Yankees at 6:00 pm, and then they all went out for ice cream.

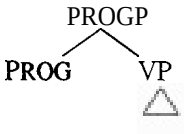
(25) low adverbial (time of eventuality): completive/inchoative, ongoing
a. At noon, the Red Sox were playing the Yankees when the sun went down, and they were still playing the Yankees when the stars came out.
b. At noon, the Red Sox were playing the Yankees when the sun went down, and then they were playing the Mariners when the stars came out.

In "ordinary" (i.e., non-futurate) progressives, the eventuality has an ongoing reading obligatorily, but in futurates, the ongoing reading is not obligatory (and for most speakers is less preferred). The evidence presented here points to this conclusion: what is progressive about progressive futurates is the plan, not necessarily the eventuality. The natural hypothesis is that the presence of progressive morphology affects the plan instead of the eventuality. What would such a hypothesis predict about the aspectual properties of the

eventuality? Iatridou (2000) observes that in constructions where tense has no direct connection with the eventuality, aspectual morphology does not contribute aspectual meaning to the eventuality. In those cases, any aspectual interpretation of the eventuality is possible.[2] Therefore we should be able to get any aspectual interpretation for the eventuality. This is exactly what we saw: the eventuality receives either a completive/inchoative or an ongoing interpretation.

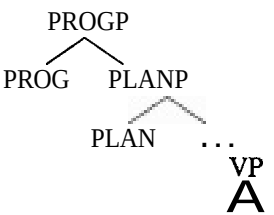
It seems as if the imperfective operator is taking PLAN as an argument rather than the VP. Here's why: in the non-futurate situation, we know that imperfective morphology has a certain semantic effect on the temporal properties of the VP. Syntactically we assume that PROGP is the smallest maximal projection dominating VP, as in (26).

(26)



Consider now the progressive futurate. The semantics of the progressive, as I have demonstrated, has no direct impact on the temporal properties of the eventuality; instead it influences the temporal properties of the plan. By analogy to (26), PROG must be taking PLANP as its propositional argument, as in (27). Hence we now have an upper bound for PLAN:

(27) upper bound established: PLANP lower than PROGP



4. An Apparent Problem: Manner Adverbials

The previous two sections established a lower bound and an upper bound for the position of PLAN. In this section we turn to manner adverbials, which when

[2] In general, the eventuality may have any interpretation that does not create a mismatch with the aspectual morphology. This is like agreement phenomena; e.g., if an English verb has agreement morphology, it has to agree with the subject. However, in non-finite clauses, where there is no agreement morphology, the subject can be in any person. Likewise, Iatridou suggests, any particular aspectual semantics can occur wherever it does not create a mismatch with the aspectual morphology.

combined with the perfect progressive futurate seem to raise a problem for the analysis.

4.1 "Plan-oriented" manner adverbials

Jackendoff (1972) discusses certain adverbs which can get either manner interpretations or subject-oriented interpretations. Cleverly and stupidly are two such adverbs. Interpretation depends on the position of the adverb with respect to the verb:

(28) a. John answered the question cleverly.
b. John cleverly answered the question.

Cleverly in (28a) has only the manner reading: 'John answered the question in a clever fashion'. (28b), according to Jackendoff, has both that reading and the subject-oriented reading: 'it was clever of John to answer the questions'. (I find the manner-oriented reading for (28b) somewhat marked.) That these are two different meanings can be shown by the fact that such adverbials can occur together, here with the meaning 'It was clever of John to answer the question in a stupid manner':

(29) John cleverly answered the question stupidly.

Certain other manner adverbs do not normally participate in this kind of alternation, including secretly, carefully, and suddenly: These apparently lack a subject-oriented reading; when the adverb appears in the higher position, the meaning is more or less the same as when the adverb is in final position (perhaps with some difference in scope which is not relevant here).

(30) a. John answered the question secretlylcarefullylsuddenly=?
b. John secretlylcarefullylsuddenly answered the question.

In progressive futurates, however, the two positions apparently reflect a difference in meaning, not only with adverbs like cleverly, but also with the second group of manner adverbs:

(31) a. Nomar is playing cleverlylsecretly tomorrow.
b. Nomar is cleverlylsecretly playing tomorrow.
c. Nomar is cleverlylsecretly playing stupidlylin plain view tomorrow.

The a examples in (31) assert that there is a plan for Nomar to play cleverlylsecretly tomorrow; the b examples assert that there is a cleverlsecret

plan for Nomar to play tomorrow, and in the c examples, the cleverlsecret plan is for him to play stupidlylin plain view. When the adverb is pronounced just before the verb, it apparently constrains time of the plan itself; call this the "plan-oriented" reading. As further evidence, (32) shows that when an adverb is semantically odd as a modifier for the plan, it is acceptable in the lower position and bizarre in the higher position:

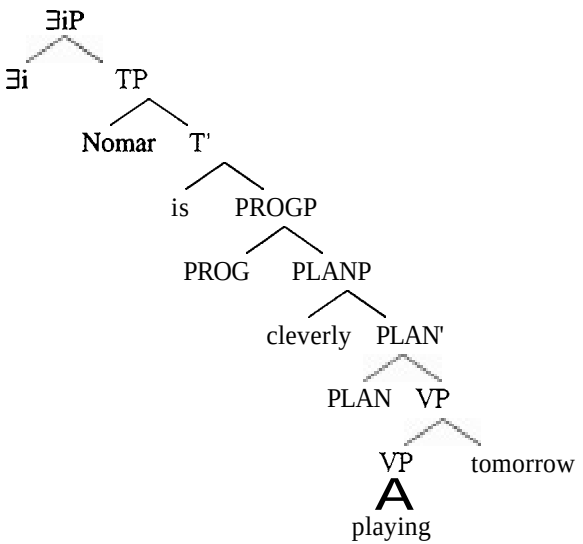
(32) a. Nomar is playing carefully tomorrow.
b. # Nomar is carefully playing tomorrow.

And (33) shows the converse; ***suddenly*** is semantically odd as a manner of playing, especially when the playing is planned ahead of time. However, ***suddenly*** is fine as a modifier of a plan. Not surprisingly, it is odd in the lower position and fine in the higher position:

(33) a # Nomar is playing suddenly tomorrow.
b Nomar is suddenly playing tomorrow.

What are the syntactic conditions on whether a manner adverbial can modify the plan? A working hypothesis might be that it has to be in Spec, PLANP:

(34)



To determine if this hypothesis could be correct, we will add inflectional material, first by adding passive ***be*** to these sentences, and then by adding the ***have*** of the perfect.

In (35) we see that the position below passive ***be*** is too low for a plan-oriented reading, as evidenced by the fact that ***secretly*** in that position with ***in plain view*** in the lower position (in 35b) is something of a contradiction:

(35) a. John is being promoted secretly tomorrow.
b. John is being secretly promoted (*in plain view) tomorrow.
c. John is secretly being promoted (in plain view) tomorrow.

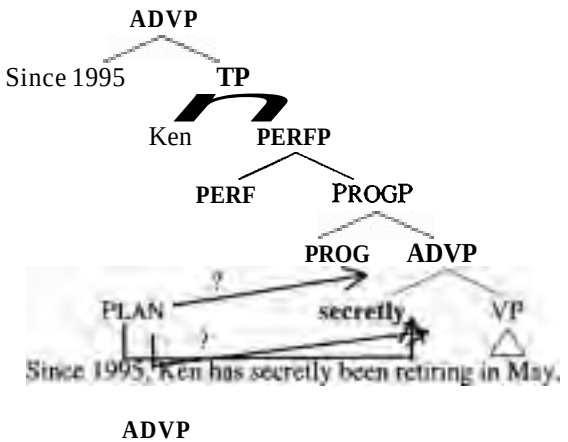
This does not contradict our working hypothesis, supposing that passive ***be*** is lower than progressive *be*,[3] if **PLAN** is between them.

4.2 A problem

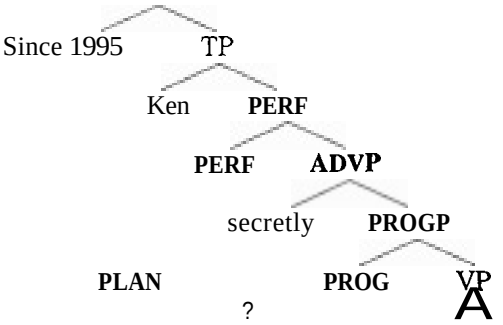
The perfect progressive futurate seems to raise a problem, however. The plan-oriented adverbial is most felicitous when it is higher than progressive ***be*** (which, recall, I have argued is higher than **PLAN.)** Consider, for instance, the examples in (36) (due to Sabine Iatridou, p.c.). The manner adverbial in (36) is in a position from which we would expect it to be able to modify the plan with ease; yet that reading is disfavored if not totally ungrammatical. (36a) favors a reading in which Ken has secretly retired in May of 1995, May of 1996, and so forth. In contrast, (36b) favors a futurate reading: (36b) means that the plan for Ken to retire in May has been in effect since 1995, and that plan has been secret. The adverbial in (36b) modifies the plan even though it is higher than **PROG.** (The arrows here indicate not movement of **PLAN** but rather potential positions for it.)

(36) a. Since 1995, Ken has been secretly retiring in May.

b.



[3] I assume be to be the location of the progressive operator; the argument is even stronger if the progressive operator is lower, e.g. the position of *-ing*.



If manner adverbials must be local to the head they modify, this is apparently a problem. While the temporal adverbial evidence seems to suggest that **PLAN** is no higher than **PROG,** the manner adverbial evidence apparently places **PLAN** no lower than **PROG.** We can't get out of this by saying that Plan is in two different positions in the different tests, because when we run the tests simultaneously, we get the same results: the playing event in (37) can get the inchoative/completive reading.

(37) Since noon, the Red Sox have secretly been playing at 6pm.

This means that **PROG** cant be applying to the event, and above I argued that that had to be because **PLAN** intervened between **PROG** and the VP. But as in (36b), **PLAN** must be in a position where it can be modified by secretly, which is higher than **PROG.**

Another possibility, and I believe a more likely one, is that **PLAN** really is in the position of **PROG,** and more strongly, that what we've been calling "**PLAN**" is actually **PROG.** This is certainly what the syntactic evidence seems to suggest. Cross-linguistically as well, futurate readings are most often possible with imperfectives (and a progressive is a kind of imperfective). It might require a much more complex meaning for **PROG** than I have assumed, or at the least, a sophisticated pragmatics, in which any future event which can somehow be referred to in the absence of a future operator, somehow must be a plannable event. (For the second "somehow" in the previous sentence, I have sketched out a preliminary account in Copley (2000), but I am not sure how the first "somehow" might be spelled out.) If this is the right approach, what it means is that futurate readings are not a morphosyntactically unitary phenomenon; strictly speaking, there is no single **PLAN** operator that is responsible for futurate readings. This seems right, cross-linguistically, since this hypothetical operator

never seems to be realized overtly, and in one language at least (Chaha, an Ethiopean Semitic language) the Aktionsart of the verb, among other things, helps determine whether a sentence can have a futurate reading (Degif Petros Banksira, p.c.). Even in English, progressives can have futurate readings in any tense, while simple (perfective) verbs can only have futurate readings in the present tense. So we might say that futurate readings are possible with the English progressive on one hand, and the English present tense on the other, without the need to unify the account morphosyntactically – albeit with much work yet to be done on the relevant semantics and pragmatics.

6. References

Abney, Steven. 1987. ***The English Noun Phrase in its Sentential Aspect.*** MIT Ph.D.dissertation.

Binnick, Robert. 1991. ***Time and rhe Verb.*** Oxford: Oxford University Press.

Carlson, Greg. 1977. ***Reference to kinds in English.*** UMass dissertation.

Copley, Bridget. 2000. "On the Syntax and Semantics of Futurate Readings", R. Bhatt et al., eds., ***MIT Working Papers in Philosophy and Linguistics 1: The Linguistics/Philosophy Interface.*** Cambridge, MA: MIT Press.

Dowty. David. 1977. "Toward a semantic analysis of verb aspect and the English 'imperfective' progressive", ***Linguistics & Philosophy*** 1, 45-77.

Dowty, David. 1979. ***Word Meaning and Montague Grammar.*** Dordrecht: D. Reidel.

Hornstein. Norbert. 1990. ***As Time Goes by: Tense and Universal Grammar.*** Cambridge, MA: MIT Press.

Iatridou, Sabine. 2000. The grammatical ingredients of counterfactuality", ***Linguistic Inquiry*** 31:2.

Horn, G. 1975. "On the nonsentential nature of the Poss-Ing construction", ***Linguistic Analysis*** 1:4.

Jackendoff, Ray. 1972. ***Semantic Interpretation in Generative Grammar.*** Cambridge, MA: MIT Press.

Lakoff, George 1971. "Presupposition and relative well-formedness", D. Steinberg and L.A. Jakobovits, eds., ***Semantics,*** Cambridge University Press.

Klein, Wolfgang. 1994. ***Time in Language.*** London: Routledge.

Leech. Geoffrey. 1971. ***Meaning and the English Verb.*** Essex: Longman.

Prince, Ellen. 1973. "Futurate Be-ing, or Why Yesterday morning, I was leaving tomorrow on the Midnight Special is OK." Unpublished ms. read at the 1973 Summer Meeting of the Linguistic Society of America.

Reuland, Eric. 1983. "Governing –ing", ***Linguistic Inquiry*** 14:1.

Vetter, David C. 1973. "Someone solves this problem tomorrow", ***Linguistic Inquiry*** 4:1.

An OT Treatment of Variation in Indo Aryan Ergative Morphology*

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1. Introduction

While NIA languages provide a common example of morphological ergativity, ergative marking and agreement patterns are not uniform amongst these languages. Our analysis of this variation in subject-marking and agreement is framed in Optimality Theory (OT; Prince and Smolensky, 1993) and employs language-particular rankings of universal constraints which allow an interaction of nominal marking, verbal inflection, and universal markedness to derive distinct marking systems (Prince & Smolensky, 1993; Aissen, 1999).

In §2, we introduce the Middle Indo Aryan (MIA) ergative construction that is the ancestor to the modern ergative clause in New Indo-Aryan (NIA), after which we present the relevant data for ergative variation in Hindi, Marathi, Bengali, Nepali and Gujarati in §3 and §4. We regard this variation as a result of ongoing processes of markedness reduction, which we present in the OT analysis in §5.

2. Morphological Ergativity in MIA

We assume a standard definition of ergativity: "a grammatical pattern or process shows ergative alignment if it identifies intransitive subjects and transitive direct objects as opposed to transitive subjects" (Plank, 1979). The ergative pattern in the past tense and perfective aspect in NIA emerges from a verbal adjective that functioned like a passive participle in the perfective.[1] Throughout this paper, we assume this analysis of the Indo Aryan ergative construction. It is not crucial to the discussion, but may be schematically represented as in (1).

(1) NP-inst *obl* NP-nom *subj* V-S-agr *passive* → NP-erg *subj* NP-nom *obj* V-O-agr *active*

The main point in (1) is that by late MIA the instrumental oblique was re-analyzed as an ergative subject. This construction had the following properties:

- The agent, marked in the instrumental case, showed subject properties.
- The object of the transitive and the subject of intransitive clauses showed nominative case marking.
- The verb, based on the earlier passive participle, showed gender and number agreement with the nominative object, and the intransitive subject.

The ergative construction in MIA may be considered marked in terms of morphological structure. First, assuming a prominence hierarchy of grammatical functions which ranks subjects higher than objects (Aissen, 1999), the ergative construction is marked because the least marked function (subject) is expressed by a morphologically more marked case (ergative), while the more marked function (object) is expressed in the unmarked (nominative) case. Second, agreement generally indexes the least marked grammatical function, and subject agreement is the most commonly attested pattern; however, in the ergative construction, agreement is with the object.

The perfective clause in NIA, which derives historically from the MIA construction, cannot be analyzed as a homogeneous construction of the MIA sort. To attribute to Indo-Aryan languages an across-the-board ergativity of this kind is to ignore a larger range of data that, in our view, points to the emergence of unmarked case and agreement systems.

The data in the next section presents typological variation in subject-marking patterns and in agreement patterns.[2] Under our analysis, the innovations in these languages constitute a representative typology of how languages reduce the markedness of an ergative construction.

3. The typology of variation in NIA

The data covers the perfective clause in Hindi, Marathi, Punjabi, Bengali, Nepali and Gujarati. As Marathi and Punjabi show the same case and agreement pattern, we treat them as a single group and only give examples from Marathi.

3.1. Hindi

In Hindi, the perfective subject is morphologically marked with the ergative postposition in all persons and numbers. This post-position in Hindi is *-ne.*

Table 1: *Hindi perfective subject marking*

ASPECT	PERSON	NUMBER	
		singular	*plural*
Non-perfective	1	mai	ham
Perfective	1	**mai-ne**	**ham-ne**
Non-perfective	2	tum	aap
Perfective	2	**tum-ne**	**aap-ne**
Non-perfective	3	vah	ve
Perfective	3	**us-ne**	**unho-ne**

The verb in Hindi agrees with the highest nominative argument (Mohanan, 1994:105). (2a) shows that the verb agrees with the nominative subject in non-perfective clauses. In (2b), the verb cannot agree with the ergative-marked

subject, and agrees instead with the nominative object. Finally, in (2c), the verb shows default agreement because both arguments are case-marked.

(2) (a) siitaa raam-ko piiTthii hai
Sita-FEM-NOM Ram-MASC-ACC hit-PRES-FEM-SG AUX-3-SG
'Sita hits Ram.'

(b) raam-ne chidiyaa dekhii
Ram-MASC-ERG bird-FEM-NOM see-PERF-FEM-SG
'Ram saw a sparrow.'

(c) siitaa-ne Raadhaa-ko piitaa
Sita-FEM-ERG Radha-FEM-ACC hit-PERF-MASC-SG
'Sita hit Radha.'

3.2. Marathi/ Punjabi

In Marathi/Punjabi, first and second person subjects in perfective clauses are not marked and are morphologically identical to non-perfective nominative subjects.

Table 2: *Marathi perfective subject marking*

ASPECT	PERSON	NUMBER	
		singular	*plural*
Non-perfective	1	mii	aamhii
Perfective	1	mii	aamhii
Non-perfective	2	tuu	tumhii
Perfective	2	tuu	tumhii
Non-perfective	3	to/tii/te	te
Perfective	3	tyaa-ne, ti-ne	tyaa-nii

The examples in (3) show the agreement facts. Despite overt morphological syncretism with the nominative forms, first and second person subjects in Marathi/Punjabi still behave like ergative subjects. In (3 b), although the subject *mii* does not show overt case marking, the verb does not agree with it.

(3) (a) mii siitaa-laa bagha-to
I-MASC-NOM Sita-FEM-ACC see-PRES-MASC-SG
'I see Sita.'

(b) mii ek chimNii baghit-lii
I-MASC-ERG one bird-FEM-NOM see-PERF-FEM-SG
'I saw a sparrow.'

(c) mii siitaa-laa baghit-la
I-MASC-ERG Sita-FEM-ACC see-PERF-NEUT-SG
'I saw Sita.'

3.3. Bengali

Old Bengali had an ergative construction in the perfective aspect (Chatterji, 1926, 1970:947-8) similar to the MIA ergative clause. Modem Bengali has lost this pattern altogether and all clause-types show a nominative-accusative pattern.

Table 3: *Bengali perfective subject marking*

ASPECT	PERSON	NUMBER	
		singular	*plural*
Non-perfective	1	aami	aamraa
Perfective	1	aami	aamraa
Non-perfective	2	tui, tumii	tomra
Perfective	2	tui, tumii	tomra
Non-perfective	3	o	oraa
Perfective	3	o	oraa

The data in (4) shows that the verb always agrees with the nominative subject.

(4) (a) **aamii** siitaa-ke dekhchii
I-NOM Sita-FEM-ACC **see-PRES-1**-SG
'I see Sita.'

(b) **aamii** siitaa-ke **dekhlaam**
I-NOM **Sita-FEM-ACC** see-PAST-1-SG
'I saw Sita.'

(c) anu **siitaa-ke** dekhlo
Anu-FEM-NOM **Sita-FEM-ACC** see-PAST-3-SG
'Anu saw Sita.'

3.4. Nepali

Nepali has ergative marking on the subject in all three persons and differs from the other languages in that overt subject case does not block subject agreement.

Table 4: *Nepali perfective subject marking*

ASPECT	PERSON	NUMBER	
		singular	*plural*
Non-perfective	1	ma	haamii
Perfective	1	**mai-le**	**haamii-le**
Non-perfective	2	ta	timii
Perfective	2	**tai-le**	**timii-le**
Non-perfective	3	**uu**	**unii**
Perfective	**3**	**usu-le**	**un-le**

The transitive verb in Nepali agrees in person and number with the subject. In (5), the verb takes the same suffix in an intransitive clause with a nominative subject as in a transitive clause with an ergative subject. The nominative object in (5b) does not trigger agreement. In Nepali, therefore, it is the subjecthood of an argument that triggers agreement, not overt case-marking (or absence thereof).

(5) (a) ma bas-en
I-NOM sit-PAST-1-SG
'I sat.'

(b) mai-le mero lugaa dho-en
I-ERG my clothes-NOM see-PAST-1-SG
'I washed my clothes.'

35. Gujarati

Gujarati shows ergative marking in all three persons.

Table 5: *Gujarati perfective subject marking*

ASPECT	PERSON	NUMBER	
		singular	*plural*
Non-perfective	1	hun	amc
Perfective	1	**men**	**ame**
Non-perfective	2	tu	tame
Perfective	2	**ten**	**tame**
Non-perfective	3	te	teo
Perfective	3	**teNe**	**temNe**

Gujarati differs from most other NIA languages in its agreement patterns: in perfective clauses, the verb agrees with the object even if it is marked accusative.

(6) (a) siitaa-e kaagal vaac-yo
Sita-FEM-ERG letter-MASC-NOM read-PAST-MASC-SG
'Sita read the letter.'

(b) **siitaa-e** **raaj-ne** pajav-yo
Sita-FEM-ERG Raj-MASC-SG-ACC harass-PAST-MASC-SG
'Sita harassed Raj.' (adapted from Mistry, 1997)

Konkani (Grierson 1905) also shows this pattern, in which case marking does not block agreement with the object, but it does block subject agreement.

4. Cross Classification of Indo Aryan Languages

From the data in §3, it is evident that NIA languages are classifiable in different ways according to their agreement and subject marking patterns. Table 6 groups the languages according to subject-marking patterns. Hindi, Gujarati and Nepali show overt ergative case in all three persons. In Marathi/ Punjabi, there is no overt marking on first and second person ergative subjects. Finally, Bengali has no morphological or abstract case on its perfective subjects.

Table 6: *Perfective subject marking typology*

SUBJ MKG	HINDI	NEPALI	GUJARATI	MAR/PUNJ	BENGALI
1st	✓	✓	✓		
2nd	✓	✓	✓		
3rd	✓	✓	✓	✓	

Those languages which group together with respect to subject marking patterns are not necessarily the ones showing similar agreement marking properties. As shown in Table 7, Hindi and Marathi/Punjabi agree with the nominative object, Gujarati extends verbal agreement to accusative marked objects. Nepali and Bengali both show agreement with the subject.

Table 7: Typology of agreement in perfective clauses

AGREEMENT	HINDI	MAR/PUNJ	GUJARATI	NEPALI	BENGALI
S-Agr	Ø	Ø	Ø	✓	✓
0-Agr (nom)	✓	✓	✓	Ø	Ø
O-Agr (nonnom)	Ø	Ø	✓	Ø	Ø

Note from the top row of languages, that the groupings of subject-marking types and agreement types do not overlap exactly. This variation is accounted for in the analysis that follows.

5. OT Analysis of Typological Variation

The typological range in the data, with partly independent subject and agreement patterns, lends itself to an analysis that draws on universal markedness hierarchies. In Optimality Theory, grammars are represented by language-particular rankings of universal, violable constraints. Constraints fall into two classes: faithfulness constraints, which relate a feature in the input to one in the output, and markedness constraints, which restrict possible output structures. Candidate outputs are evaluated for a given input according to these ranked constraints, and the optimal candidate violates the lowest ranked constraints.

Here, we use Aissen's **(1999)** implementation of harmonic alignment and constraint conjunction in syntax, based on Prince and Smolensky **(1993).** Alignment constraints are derived from the alignment of various universal

hierarchies.[3] Since such constraint alignments are derived from universal scales, they cannot be mutually reranked within one constraint subhierarchy.

We first present universal subject-marking constraints and their specific rankings, followed by universal agreement subhierarchies and their rankings.[4]

5.1. Subject-marking constraints

The hierarchy of subject-marking constraints in Table 8 was proposed in Aissen (1999). The universal scales of grammatical function and person rank are listed in the first column. The typological markedness reversal between subjects and objects (Battistella 1990) is captured by direct and inverse alignments of subject and object respectively with the person hierarchy, as in the second column. These state, for instance, that it is more harmonic for a subject to be first person than third person. Finally, the universal subhierarchies of actual constraints are shown in the third column. These are derived by prefixing the "Avoid" operator (*) to each alignment and stating the ranking in terms of decreasing markedness. Most importantly, the relative ordering of these constraints is universal.

Table 8: Deriving person markedness constraints

UNIVERSAL SCALES	HARMONIC ALIGNMENT	CONSTRAINT ALIGNMENT
Subject > ***Object***	Su/Loc ≻ Su/3	*Su/3 » *Su/Loc
Local (1st, 2nd) > ***3rd***	Oi/3 ≻ Oi/Loc	*Oi/Loc » *Oi/3

Aissen conjoins these constraints with the constraint $*Ø_c$, requiring arguments to be marked with some case form. This captures the idea that marked configurations of features should be morphologically marked. The ranking in (7) states that 3rd person subjects are universally more marked than 1st and 2nd person subjects.' Each constraint can only be satisfied by overt case-marking.

(7) *SU/3 & $*Ø_C$ » *SU/LOC & $*Ø_C$ (Aissen 1999:673)

As our data is specific to the domain of perfectivity, we conjoin Aissen's constraints with a constraint on perfective subjects[6]

(8) *SU/3 & *SU/PERF & $*Ø_C$ » *SU/LOC & *SU/PERF & $*Ø_C$

The highest constraint in (8) states that a subject occurring in a perfective context and simultaneously being associated with third person must be overtly marked. The universally less marked constraint requires this of local person perfective subjects.

(9) *STRUC$_c$: Avoid (case specification) structure (P&S 1993:25, Aissen 1999)

Finally, the constraint in (9) penalizes any morphological structure. Aissen (1999) employs the constraint *STRUC$_c$ to specifically penalize case morphology, which is our use here. *STRUC serves as an economy constraint.

Using just the three constraints in (8) and (9), we can begin to account for changes in the various IA subject-marking systems.[7] In (10) we list the possible rerankings of the three constraints, along with the systems in which these rankings are found.

(10)
*SU/3 & *SU/PERF & *$Ø_C$ ←— *STRUC (Bengali: no subjs marked)
*SU/LOC & *SU/PERF & *$Ø_C$ ←— *STRUC (Marathi/Punjabi: only 3p subjs marked)
←— *STRUC (Nep., Hindi, Guj., MIA: all subjs marked)

In (10), the constraints requiring subject marking are progressively demoted below *STRUC — partially in Marathi and Punjabi and completely in Bengali — allowing the universal avoidance of overt subject marking to emerge. The rankings for each language type are shown in (11).

(11) (a) *STRUC » *SU/3 & *SU/PERF & *$Ø_C$ » *SU/LOC & *SU/PERF & *$Ø_C$
(b) *SU/3 & *SU/PERF & *$Ø_C$ » *STRUC » *SU/LOC & *SU/PERF & *$Ø_C$
(c) *SU/3 & *SU/PERF & *$Ø_C$ » *SU/LOC & *SU/PERF & *$Ø_C$ » *STRUC

In Bengali, in (11a), *STRUC dominates both markedness constraints, so the morphologically unmarked candidates are selected as optimal. In Hindi, Gujarati and Nepali, in (11c), *STRUC is ranked below both subject constraints, resulting in marked subjects always satisfying one of the higher ranked constraints.

Finally, in Marathi/Punjabi, in (11b), *STRUC intervenes between the two markedness constraints. This example is shown in more detail in (12) below. The tableau shows only the relevant, partial inputs for transitive, perfective clauses and the constraints are also abbreviated for reasons of space. As in Aissen (1999), case constraints and case-marking in candidates refer to overt morphology, not abstract case. We return to the distinction between these two after presenting our initial analysis.

(12) Marathi/Punjabi

		*SU/3/PERF & *$Ø_C$	*STRUC	*SU/LOC/PERF & *$Ø_C$
INPUT: Subj (loc)				
	a. S-erg		*!	
☛	b. S-Ø			*
INPUT: Subj (3rd)				
☛	c. S-erg		*	
	d. S-0	*!		

The candidates (a), (b), (c), and (d) are evaluated according to the ranked constraints. Two different inputs are contrasted, to show which candidate gets

selected according to the person feature in the input and the language particular rankings. 3rd person subjects must be case-marked to satisfy the highest constraint, even though they violate *STRUC, but since the lower-ranked subject constraint is below *STRUC, null-marked 1st and 2nd person subjects are preferred, so candidate (b) is chosen over (a).

The three constraint rankings in (I 1) give us the three sets of language types from Table 6. As *SU/3 and *SU/LOC are constraints within a universal subhierarchy, they are never mutually reranked; their ranking only varies in relation to *STRUC. Under our analysis, their progressive demotion below *STRUC represents the systematic elimination of overt marking on subjects.

5.2. Agreement constraints

As the data earlier showed, agreement cannot be captured as a direct default which occurs only when case is absent. Nepali allows agreement across case-marked subjects, and Gujarati allows agreement with case-marked objects. Thus, independent agreement constraints are necessary.

(13) EXPRESS AGR: A predicate agrees with some argument

This constraint is a type of faithfulness constraint requiring agreement of some sort.[8] We distinguish explicit number, gender or person agreement from default agreement here. The constraint in (13) is not satisfied by default agreement, which takes the form of masculine or neuter singular inflection in these languages. The choice of full agreement vs. default agreement in different contexts is accounted for in the analysis that follows. Since default agreement is treated as non-agreement in our analysis, it is assumed to occur in order to satisfy an independent requirement for finiteness marking. The constraint on finiteness marking requires some overt marking to distinguish finite from nonfinite verb stems. As this requirement holds identically for all the languages in question, we exclude this constraint from our discussion. So candidates with completely uninflected verb forms are not considered here. Candidates with default agreement, however, may be chosen for certain inputs and do interact with full agreement. The examples that follow show the circumstances under which default agreement is preferred over full agreement.

EXPRESS AGR is used in Bresnan (in press) only for subject agreement. In order to generalize her constraint systematically, we align it with the relational hierarchy to permit agreement with more than just subjects, but still to constrain the relative markedness of each type of agreement. The resulting constraint alignments are given in (14).

(14) *NON-SUBJ OR/AGR » *SU/AGR » *SU/AGR

The universally least marked agreement pattern, according to this constraint hierarchy, is subject agreement. Object agreement is more marked and agreement

with non-core grammatical functions is the most marked. This highest constraint is left out of the discussion, as it is never violated in the data here.

Since the data includes agreement across certain cases, we must ensure that agreement is not only sensitive to grammatical function but also to case. To this end, we assume a similar alignment of agreement with case, as shown in (15). In her cross-linguistic study of the interaction of case-marking with faithfulness constraints, Woolford (to appear) proposes the universal hierarchy of *ERGATIVE, *DATIVE » *ACCUSATIVE » *NOMINATIVE, which we follow here to derive case-sensitive agreement.[9]

(15) *ERG/AGR » *ACC/AGR » *NOM/AGR

The two universal subhierarchies of agreement constraints in (14) and (15) interact to derive the observed language types. In the examples that follow, case selection is ensured by the constraints presented in the last section. These examples are restricted to agreement alternations. Each example shows three different types of clausal inputs — perfective with a specific (ACC) object, perfective with a nonspecific (NOM) object, and nonperfective — to show how the constraints interact to derive agreement for different clause types.

First, we turn to the Hindi, Marathi and Punjabi group, which allows agreement with either subject or object, as long as its case is nominative.

(16) Hindi, Marathi, Punjabi

	*ERG/AGR *ACC/AGR	EXPR AGR	*OJ/ AGR	*SU/ AGR	*NOM/ AGR
INPUT: S O(spec) V(perf)					
a. S-erg O-acc V-Sagr	* !			*	
b. S-erg O-acc V-Oagr	* !		*		
☛ c. S-erg O-acc Vdefault		*			
INPUT: S O(nonspec) V(perf)					
d. S-erg O-nom V-Sagr	* !			*	
☛ e. S-erg O-nom V-Oagr			*		*
f. S-erg O-nom V-default		* !			
INPUT: S O V(nonperf)					
☛ g. S-nom O-nom V-Sagr				*	*
h. S-nom O-nom V-Oagr			* !		
i. S-nom O-nom V-default		* !			

In (16), the first input requires case on both subject and object. In this situation, default agreement wins out of candidates (a), (b), and (c), because agreement with either argument would violate the restriction on agreement with ergative or accusative. When the object is not marked accusative, as in (d), (e), and (f), object agreement is preferred to a violation of the higher-ranked EXPRESS AGR. Finally, if neither subject nor object is case-marked, as in (g), (h), and (i), then subject agreement is ideal because object agreement is universally more marked.

Turning to Gujarati in **(17),** the only difference from the Hindi group in (16) is the promotion of the faithfulness constraint EXPRESS **AGR** above ***ACC/AGR.**

(17) Gujarati

	*ERG/ AGR	EXPR AGR	*ACC/ AGR	*OJ/ AGR	*SU/ AGR	*NOM/ AGR
INPUT: S O(spec) V(perf)						
a. S-erg O-acc V-Sagr	*!				*	
☛ b. S-erg O-acc V-Oagr			*	*		
c. S-erg O-acc V-default		*!				
INPUT: S O(nonspec) V(perf)						
d. S-erg O-nom V-Sagr	*!				*	
☛ e. S-erg O-nom V-Oagr				*		*
f. S-erg O-nom V-default		*!				
INPUT: S O V(nonperf)						
☛ g. S-nom O-nom V-Sagr					*	*
h. S-nom O-nom V-Oagr			*!	*		
i. S-nom O-nom V-default		*!				

This **reranking** only affects the first input (17). In the Hindi group, this input resulted in default agreement since both arguments were case-marked. In Gujarati, because EXPRESS **AGR** is higher ranked, agreement with the accusative is less bad than default agreement and so candidate (b) wins. The other two types of inputs are unaffected, and still select the highest nominative argument.

Finally, Nepali also contradicts the nominative agreement pattern of the Hindi group by allowing agreement with the ergative. This violates the highest constraint in (15). But, this is still preferable to agreement with any type of object, hence the ranking shown in (18).

(18) Nepali, (Bengali)

	EXPR AGR	*OJ/ AGR	*SU/ AGR	*ERG/ AGR	*ACC/ AGR	*NOM/ AGR
INPUT: S O(spec) V(perf)						
☛ a. S-erg O-acc V-Sagr			*	*		
b. S-erg O-acc V-Oagr		*!			*	
c. S-erg O-acc V-default	*!					
INPUT: S O(nonspec) V(perf)						
☛ d. S-erg O-nom V-Sagr			*	*		
e. S-erg O-nom V-Oagr		*!				*
f. S-erg O-nom V-default	*!					
INPUT: S O V(nonperf)						
☛ g. S-nom O-nom V-Sagr			*			*
h. S-nom O-nom V-Oagr		*				*
i. S-nom O-nom V-default	*!					

The only difference here between Nepali and the other groups is that none of the case constraints on agreement outrank the grammatical function subhierarchy. One way of looking at it is that since overt subject marking in Nepali has not been reduced, the agreement pattern has generalized agreement to the least marked argument, eliminating the marked situation of object agreement altogether. Bengali falls in the same category for agreement but has no subject marking at all, so although the ranking in (18) is identical for Bengali agreement, candidates with nominative subjects would be the winners.

To briefly summarize this section, the formal groupings of languages according to our analysis correspond to the cross-classification of the data in Table 7. The analysis shows that the directions in which each ranking has moved essentially represents some manner of markedness reduction.

6. Discussion

6.1. Null ergative case

One final note on the analysis of case constraints is necessary. Aissen's (1999, 2000) discussion of case markedness constraints is restricted to morphological case. This approach is well-suited for the progressive loss of overt case-marking. However, the facts for Marathi/Punjabi show clearly that the null morphology of first and second person subjects does not indicate bare nominatives, but rather non-overt ergatives. This can be seen in the Marathi data in (19). In (19b), the adjectival modifier of the perfective, transitive subject, which agrees with the head noun, occurs in the oblique case. By contrast, this modifier takes the nominative form when modifying a nonperfective subject as in (19c). Furthermore, the verb does not agree with the null ergative subject in (19b) either.

(19) (a) mii ek aambaa khaa-llaa
I-ERG one mango-NOM eat-PERF-3-SG
'I ate a mango.'

(b) vedyaa ashaa mii ek ambaa khaa-llaa
foolish-OBL like-OBL I-OBL one mango-NOM eat-PERF-3-SG
'Foolish me ate a mango.'

(c) vedii ashii mii ek ambaa khaa-te
foolish-NOM like-NOM I-NOM one mango-NOM eat-PRES-1-SG
'Foolish me eats a mango.'

Woolford (to appear) also notes the need for this distinction between null ergative and nominative in languages such as Marathi. She exclusively restricts her case analysis to abstract case, while the analysis in Aissen (1999) applies

only to morphological case. In our analysis here, we must distinguish between Bengali, which has true nominative subjects and agreement with these subjects, and **Marathi** and Punjabi, which have underlyingly ergative, null-marked subjects that do not agree with the verb. Thus, both Woolford's and Aissen's interpretations of constraints on case must be unified to encompass the typological range in the present data.

One way of expressing this, as **Woolford** does in a somewhat different approach, is to include faithfulness constraints that require abstract ergative case to be associated with perfective subjects, independent of the loss of overt morphological marking. For the present, we simply include a version of Woolford's (to appear) constraint that marks perfective subjects as abstract ergatives.

The actual ranking for Punjabi and **Marathi** now, in contrast to the purely morphological approach that was given in (I lb) and **(12),** must include a high ranking abstract case constraint to make the distinction between null ergatives and true nominatives.

(20) $\text{FAITH-LEX}_{perf} \gg$ *SU/3 & *SU/PERF & $*Ø_C \gg$ *STRUC $\gg$ *SU/LOC & *SU/PERF & $*Ø_C$

With this revision, although the morphological markedness constraints permit null-marking on first and second person subjects, the faithfulness constraint requires abstract ergative case. This is merely a provisional representation of the interaction of abstract and morphological case which is needed in this data.

6.2. Summary

To summarize, at the outset of our talk we showed that the MIA ergative, perfective construction had several universally marked features, such as **case-**marking on the subject and verb agreement with the object. A formal model of two general strategies of reducing markedness along universal hierarchies was provided for the range of NIA systems. In terms of subject marking, the gradual promotion of ***STRUC** above case marking constraints gives rise to unmarked subjects in Bengali, **Marathi** and Punjabi. Those languages which retain subject-marking — Hindi, Gujarati, and Nepali — show markedness changes in agreement instead. The promotion of the faithfulness constraint **EXPRESS** AGR combined with universal hierarchies of agreement types lead to the emergence of unmarked patterns of either subject agreement or nominative agreement. Thus, in Hindi agreement is restricted to the least marked case (nominative), and in Nepali it is restricted to the least marked grammatical **function** (subject).

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[1] Our use of the term 'perfective' follows Masica (1991) in specifying morphological past tense marking as well as ergativity in Indo Aryan languages.
[2] All the NIA languages in the typology under consideration here have developed a complex system of object marking based on definiteness and animacy. We regard it as an additional strategy for markedness reduction (Cf. Differential Object Marking; DOM; Aissen 2000) but do not discuss it in the paper.
[3] This operation takes a binary structural scale (e.g. a grammatical function scale) and aligns each member of a second scale (e.g. an animacy scale) with the first.
[4] The focus here is on the association of morphological marking with grammatical functions, and not on the determination of grammatical functions themselves, which will be assumed to be independently ensured through the type of argument-function correspondences proposed in Lexical Mapping Theory (LMT; Bresnan & Kanerva, 1989) and further developed for OT in Bresnan (in press).
[5] The corresponding object marking constraints are not addressed in this paper (see Aissen (2000) for a discussion of this constraint subhierarchy).
[6] See Sharma (to appear) for a discussion of the alignment of perfectivity and grammatical functions for aspectually-split ergativity in Indo-Aryan languages.
[7] Faithfulness to input features such as gender and number is assumed to be satisfied in all candidates.
[8] The crucial difference in choosing to formulate the constraint as EXPRESS AGR rather than as a markedness constraint such as *EXPRESS AGR (formulated like *STRUC) is that the formulation in (13) favors agreement of some sort, while a markedness constraint would favor non-agreement. We assume that case marking performs a discriminant function amongst arguments cross-linguistically, often signaling a marked situation. Agreement, on the other hand, is seen as a prominence relation with the least marked. In other words, case and agreement do not perform identical functions; case is avoided except under marked circumstances, such as 3rd person subjects, while agreement is a default, occurring in unmarked contexts such as subjects over objects.
[9] As the case-agreement hierarchy assumed in (15) is inspired by Woolford (to appear), we restrict it to abstract case as she does. In fact, this gives the correct results, as the constraint *ERG/AGR correctly prevents agreement with 1st and 2nd person subjects in Marathi/Punjabi, regardless of whether their morphological case is overt.

References

Aissen, Judith. 1999. "Markedness and Subject Choice in Optimality Theory", *Natural Language and Linguistic Theory. 17:* 673-711.

Aissen, Judith. 2000. "Differential Object Marking: Iconicity vs. Economy", Ms. University of California, Santa Cruz. http://ling.ucsc.edu/~aissen/ms.html

Battistella, Edwin L. 1999. ***Markedness: The Evaluative Superstructure of Language.*** Albany: State University of New York Press.

Beames, John. (1966). ***A Comparative Grammar of Modern Indo-Aryan Languages of India.*** Delhi: Munshiram Manoharlal.

Bresnan, Joan. In press. "Optimal Syntax", in F. van der Leeuw, J. Dekkers, and J. van de Weijer (eds.). ***Optimality*** Theory: ***Phonology, Syntax, and Acquisition.*** Oxford: Oxford University Press.

Bresnan, Joan and Jonni Kanerva. 1989. "Locative Inversion in Chichewa: A Case Study of Factorization in Grammar", *Linguistic Inquiry*, 20: 1-50.

Chatterji, Suniti Kumar. 1970 [1926]. *The Origin and Development of the Bengali Language*. George Allen and Unwin Ltd.

Grierson, G. A. 1905. *Linguistic Survey of India VII: Indo-Aryan Family, Southern Group (Marathi)*. Delhi: Motilal Banarsidass.

Masica, Colin P. 1991. *The Indo-Aryan Languages*. Cambridge: Cambridge University Press.

Mistry, P. J. 1997. "Objecthood and Specificity in Gujarati", in Lyle Campbell, Jane Hill, and P. J. Mistry (eds.). *The Life of Language: Papers in Honour of William Bright*. Mouton de Gruyter.

Mohanan, Tam 1994. *Argument Structure in Hindi*. Stanford, California: CSLI Publications.

Plank, Frans. 1979. "Ergativity, Syntactic Typology, and Universal Grammar: Some Past and Present Viewpoints", in Frans Plank (ed.). *Ergativity: Towards a Theory of Grammatical Relations*. New York: Academic Press.

Prince, Alan and Paul Smolensky. 1993. "Optimality Theory: Constraint Interaction in Generative Grammar", to appear in Linguistic Inquiry Monograph Series. Cambridge, MA: MIT Press.

Sharma, Devyani. To appear. "Kashmiri Case Clitics and Person Hierarchy Effects", in Peter Sells (ed.). *Formal and Empirical Issues in Optimality-Theoretic Syntax*. Stanford, California: CSLI Publications.

Woolford, Ellen. To appear. "Case Patterns", in J. Grimshaw, G. Legendre, and S. Vikner (eds.). *Optimality-Theoretic Syntax*. Cambridge, *MA:* MIT press.

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Syntactic vs. Semantic Valence: Verbal **Affixes** in Minangkabau

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1. Introduction

This paper argues for the existence of the phenomenon of two distinct types of valence, semantic valence and syntactic valence, as defined in Van Valin and La Polla's Role and Reference Grammar (RRG) (1997). Empirical support for this claim is provided by an analysis of the usage of verbal affixes in Minangkabau (a Western Malayo-Polynesian language) which demonstrates that these are in fact separate notions which are reflected in the intuitions of the native speaker of Minangkabau.

2. Semantic and Syntactic Valence

When discussing valence or transitivity of verbs, linguists have not always consistently differentiated between semantic transitivity and grammatical (syntactic) transitivity. This has led to much ambiguity surrounding the terms valence (and especially) transitivity, as the following illustrates:

> 'There are some [linguists] who would say *eat* is always *a* transitive verb. These linguists use the term transitive in the sense we use the term "semantically transitive". Others would say that *eat* is sometimes transitive and sometimes intransitive. These linguists are most likely referring to syntactic transitivity. Still others would say that there are two related verbs *eat* in the lexicon of English, one of which is transitive and the other intransitive' (Payne 1997: 171).

A number of seminal works has been published in Europe in the last three decades on this problem'. The topic has more recently been followed up on within the syntactic framework of Van Valin and La Polla's Role and Reference Grammar (RRG), which has attempted to address this issue by clearly distinguishing two distinct types of valence, semantic valence and syntactic valence. Valence is the general notion which deals with the question, 'How

many arguments does a verb take?' More precisely, however, semantic valence may be defined as 'the number of semantic arguments that a verb may take' (Van Valin et al 1997: 147); alternatively, it may be described as 'the number of necessary ***participants*** that must be "on stage" in the scene expressed by the verb' (Payne 1997: 169-171). Conversely, syntactic valence refers to 'the number of overt morpho-syntactically coded arguments a verb takes' (Van Valin et al 1997: 147) within a particular clause; or we may say that it refers to 'the number of ***arguments*** present in any given clause, where an argument is any nominal element (including zero) that bears a grammatical relation to the verb' (Payne 1997: 170-2).

What is the value, then, in making a distinction between the syntactic and semantic valences of a verb? There are a few critical differences between the two types of valence, and by making a distinction between the two, ambiguities of the type that Payne refers to in the preceding quotation may be eliminated. First, the semantic valence of a verb may be considered lexical: the semantic valence of a given verb never changes, no matter what context that verb appears in, unless there are some overt morpho-syntactic processes which serve to modify it. On the other hand, the syntactic valence of a given verb may vary, and is often determined by the particular clause in which the verb appears. Crucially, therefore, the syntactic and semantic valences of a given verb within a given sentence need not be equivalent.

A simple example from English can illustrate this difference. The English verb ***eat*** has a lexical semantic valence of two; this is invariable. However, its syntactic valence may alternatively be one, as in The ***dog is eating,*** where the direct object of ***eat*** is not overtly expressed; or it may be two, as in The ***dog is eating a bone,*** where the direct object of the verb is overtly expressed.

Why, then, is it the case that the syntactic valence of a verb within a clause may be less than the lexical semantic valence of that same verb? We can call upon discourse to explain this seeming discrepancy: 'In the overwhelming majority of instances when a verb with a semantic valence of two occurs with no (overt morpho-syntactic) reference to the second argument, the situation is one in which the identity of the item that fills that second argument role has not been established and need not be established in order for the speaker to achieve his/her communicative goal' (Payne 1997: 170). In other words, one of the semantic arguments of the verb may remain unexpressed, if the speaker feels that there is no need to explicitly define it as such.

Therefore, the syntactic valence of a verb within a given clause may either be less than or equal to that verb's lexical semantic valence. Conversely, however, the syntactic valence of the verb within a given clause is never permitted to exceed its semantic valence. Another simple example from English will serve to illustrate this point. The English verb ***sit,*** which has a semantic valence of one, must then have a syntactic valence of one, as in ***The dog is sitting.*** When the syntactic valence of the verb is increased to two with the addition of an overtly

expressed direct object, but without an analogous change in its semantic valence, illegal constructions result, as in *The dog is sitting *the floor*.

Another term which needs to be defined is transitivity, which is very closely aligned to the notion of valence. A transitive verb is one which describes the relation between two participants, such that one of the participants acts toward or upon the other. The following Minangkabau example illustrates a transitive verb, *batʃo,* 'read'. In this clause, the verb is both semantically and syntactically transitive (that is, it has a semantic valence of two as well as a syntactic valence of two).

(1.) ambo mambatʃo boku
ambo maN– batʃo boku
1 TRANS– read book
'I read the book.'

Likewise, an intransitive verb is one that describes a property, state or situation involving only one participant. The following Minangkabau example illustrates the semantically and syntactically intransitive verb gala?, 'laugh'. Again, this means that the semantic valence of the verb is one, and that the syntactic valence of the verb is also one.

(2.) ambo gala?
ambo gala?
1 laugh
'I laugh.'

3. Minangkabau

Minangkabau provides justification for positing that there are indeed these two distinct types of valence.

3.1 Typological Information

Minangkabau is a language of the Malayo-Chamic sub-branch of the Western Malayo-Polynesian branch of the Austronesian language family. Although Minangkabau is closely related to Malay, it is not mutually intelligible with either Malay or Bahasa Indonesian.

Minangkabau is spoken primarily on the western part of the island of Sumatra (Sumatera Barat), Indonesia; various recent estimates place it as having between 3 million to 7 million speakers. The ethnic group is alternatively known as Urang Padang, and the language as Padang. Virtually all Minang speakers are Muslim.

Minangkabau word order is canonically SVO, and the language is largely isolating, displaying only a limited amount of inflectional and derivational morphology.

3.2 The Corpus

For this study, a corpus of 278 verbs was elicited and classified according to type per Payne's semantic classification of verbs. This classification, as seen in ***Table*** I: ***Minangkabau verbs,*** demonstrates that a full semantic range of verb types was considered in the analysis. Of these 278 verbs, 239 (86%) were verb roots, while the remaining 14% were verbs derived from roots of Minangkabau's other major word classes (namely nouns, adjectives, and prepositions).

Table 1: Minangkabau verbs, according to Payne's classification of verbs

ACTION (DYNAMIC)	30	MOTION (LOCOMOTION)	25
ACTION (NON-DYNAMIC)	10	MOTION (SIMPLE)	5
ACTION-PROCESSES	63	NORMAL	8
BODILY FUNCTIONS	30	SENSATION	9
COGNITION	14	STATES	15
EMOTION	4	UTTERANCE	20
FACTIVES	3	WEATHER VERBS	5
INVOLUNTARY PROCESSES	21	UNCLASSIFIABLE	7
MANIPULATION	9		
		Total	278

4. The Empirical Support

Throughout the remainder of this paper, it will be argued that distinct notions of syntactic and semantic valences are clearly recognized by the native speaker of Minangkabau. It will be shown that there are certain verbal **prefixes** which serve to mark semantic transitivity only (i.e., they serve to indicate that the semantic valence of the verb is two (or more)). Conversely, there are certain verbal **suffixes** which serve to change syntactic transitivity only (i.e., they serve to increase the syntactic valence of the verb beyond its lexical semantic valence).

The following table, ***Table*** 2, ***Minangkabau valence,*** summarizes the two **affixes** that will be the focus of the remainder of this paper. (Although this table does not provide an exhaustive listing of all Minangkabau valence-affecting verbal morphology, these two affixes are by far the most productive, and most relevant to illustrate the phenomenon being discussed.)

Table 2: Minangkabau valence

maN-[2]	marks semantic valence
–kan	changes syntactic valence

4.1 Marking Semantic Valence in Minangkabau

The verbal prefix ***maN-*** marks verb roots which are not semantically intransitive. In other words, it may mark verb roots which have a semantic valence of two, such as ***gigi?*** 'bite', and those which have a semantic valence of three, such as ***agiah*** 'give'. The prefix productively marks all semantically transitive verbs, whether or not they are syntactically transitive or syntactically intransitive in their clause. However, the prefix may optionally be deleted if and only if the following requirement is met: the syntactic valence of the verb must be exactly equal to the verb's semantic valence. In other words, if the speaker overtly expresses all of the semantic arguments of the verb, the prefix ***maN-*** is effectively rendered **superfluous,** as it is illegal for the syntactic valence of a verb to exceed its semantic valence.

Example (3) illustrates the usage of ***maN-*** with a semantically transitive verb root, ***gigi?*** 'bite'. In sentence **(3)a.,** neither an overt direct object nor the semantic transitivity marker ***maN-*** is expressed; this is an illegal construction in Minangkabau, since the semantic transitivity of the verb root is not represented. However, sentences (3.) b., c., and d. are all acceptable. In **(3.)b.,** ***maN-*** has been deleted, as an overt direct object, ***pisaŋ*** 'banana' is contained within the clause. Conversely, in **(3.)c.,** ***maN-*** is necessary to mark the verb, since the direct object of the verb is not morpho-syntactically represented. Finally, in **(3.)d.,** both ***maN-*** and the direct object are overtly stated.

(3.) a. * **iŋo** gigi?

iŋo gigi?
3 bite
'He bites.'

b. **iŋo** gigi? pisq

iŋo gigi? **pisaŋ**
3 bite banana
'He bites the banana.'

c. ipo **maŋgigi?**

iŋo **maN–** gigi?
3 TRANS– bite
'He bites.'

d. **iŋo** mqgigi? **pisaŋ**

iŋo **maN–** gigi? pisq
3 TRANS– bite banana
'He bites the banana.'

Example (4) demonstrates that the case is the same with semantically ditransitive verb roots **(i.e.,** possessing a semantic valence of three), such as ***agiah*** 'give'. As both the direct object, *kue* 'cake' and the indirect object ***ana?*** 'child' are overtly expressed, ***maN-*** may optionally be deleted, **as** in sentence **(4.)a.,** or not, **as** in sentence **(4.)b.**

(4.) a. ambo agiah **kue** ka **ana? kete?tu**

ambo agiah **kue** ka **ana?** kete? +itu
1 give cake to child small +DEM
'I give a cake to that child.'

b. ambo maagiah kue ka ana? kete?

ambo	maN–	agiah	kue	ka	ana?	kete?
I	TRANS–	give	cake	to	child	small

'I give a cake to the child.'

Within the corpus of verbs considered in this study, there are a total of 61 verb roots which have a semantic valence of two or three. All 61 verb roots demonstrate that ***maN*-root** and bare root have the same meaning to speakers of **Minangkabau** and display the same distribution; in effect, the two are usually interchangeable, in any clause where the syntactic valence is exactly equal to that verb's semantic valence.

However, there does appear to be one restriction on usage of the bare root, namely that a demonstrative pronoun such as ***iko*** or ***itu*** with the object noun phrase is required if the verb is not marked with *maN-*. One possibility is that this is because attention must be drawn to the object, effectively demonstrating that there is indeed a specific noun phrase upon which the action is being performed. Example (5) demonstrates this restriction, in this case upon the semantically transitive verb ***palua*** 'hold on (one's) lap': sentence (5.)c. shows that ***maN-*** may not be omitted from the verb if the demonstrative ***iko*** is not used to mark the **direct** object noun phrase, ***ana? kete?*** 'small child'.

(5.) a. ambo mamalua **ana?** kete?

ambo	maN–	palua	ana?	kete?
1	TRANS–	hold.on.lap	child	small

'I hold (the, a) child on my lap.'

b. ambo palua **ana? kete?ko**

ambo	palua	ana?	kete?	+*iko*
1	hold.on.lap	child	small	+DEM

'I hold this child on my lap.'

c. * ambo palua **ana?** kete?

ambo	palua	ana?	kete?
1	hold.on.lap	child	small

'I hold (the, a) child on my lap.'

There is further evidence that ***m d –*** serves to mark semantically transitive verbs. As the next set of examples will demonstrate, verbs with a semantic valence of one cannot occur with ***maN–***. Example (6.) demonstrates this phenomenon with the semantically intransitive verb ***mimpi*** 'dream'; as sentence **(6.)b.** indicates, it is not possible for this verb to take the **prefix *m d –* .**

(6.)a. **ana? kete?tu** mimpi

ana?	kete?	+itu	mimpi
child	small	+DEM	dream

'That child dreams.'

b. * ana? kete?tu mamirnpi

The semantic transitivity marker *maN–* is also productively used to form derived semantically intransitive verbs from nouns. In the corpus of data, there exist numerous instances of verbs which have been derived from nominal roots[3] with the affixation of *maN–;* these derived verbs consistently possess a semantic valence of one. The meaning of the derived verb remains very close to that of the nominal root, however. The next two examples demonstrate this process. In Example (7.), the derived verb ***manitia?*** 'drip' has been formed from prefixing *maN–* to the nominal root ***titia?*** 'droplet of liquid'.

(7.) darah manitia? dari ajiam

darah	**maN–**	titia?	**dari**	ajiam
blood	**TRANS-**	droplet	from	chicken

'Blood dripped from the chicken.'

In Example (8.), the derived verb ***malompe?*** 'jump' has again been formed from prefixing *maN–* to the nominal root ***lompe?*** 'jump'.

(8.) ana?tu malompe?

ana?	+itu	**maN–**	lompe?
child	+DEM	TRANS–	**jump(N)**

'The child **jumped.'**

4.2 Changing Syntactic Valence in Minangkabau

I have just described how semantic transitivity is marked in Minangkabau; now, I will discuss the process of changing syntactic valence. The verbal suffix ***–kan*** is a syntactic valence-changing device which licenses an additional argument noun phrase in the clause; this is its primary function. However, as was argued earlier, as it is in fact never permissible for the syntactic valence of a verb to exceed its semantic valence, any increase in the verb's syntactic valence must also be accompanied with a corresponding increase in its semantic valence.

In summary, then, ***–kan*** productively attaches to verb roots to mark an increase in the normal syntactic (and, therefore, semantic) valence of the verb root by one argument. However, the semantic role of the additional argument may vary, as the following examples will demonstrate.

In the first group of examples, it is shown how the affixation of ***–kan*** will render an intransitive verb root transitive (i.e., it increases the verb's syntactic valence from one to two); simultaneously, the verb's semantic valence will increase from one to two as well. Sentence (9.)a. shows the semantically and syntactically intransitive verb root ***tabaŋ*** 'fly (intransitive)'; lexically, therefore, the verb root permits for only one argument, the subject, in this case ***buruaŋ*** 'bird'.

(9.)a. buruaŋ tabaŋ

buruaŋ tabag
Bird fly
'The bird flies.'

In Sentence (9.)b., following the affixation of *–kan* (as well as the optional semantic transitivity marker *maN–*), a derived syntactically and semantically transitive verb, *maŋabaŋkan* 'fly (transitive)' has been created. The derived verb permits an additional argument, a direct object, in this case the nominal compound kapatabag 'airplane'.

b. iŋo manabagkan kapatabag

iŋo	maN–	tabaŋ	*–kan*	kapa–	tabaŋ
3	TRANS-	fly	–APPLIC [4]	boat–	fly

'He flies the airplane.'

Sentence (9.)c. demonstrates that *–kan* can indeed function independently of *maN–*. The syntactic valence of the derived verb is effectively reduced following the prefixation of the passivizing prefix *di–*, which promotes the original duect object of the derived verb to subject position.

c. ube? ambo ditabaŋkan dari indonesia

ube?	ambo	di–	tabag	*–kan*	dari indonesia
drug	1	PASS-	fly	–APPLIC	from Indonesia

'My medicine was flown from Indonesia.'

Another instance of this is shown in Example (10.) Sentence (10.)a. is repeated fiom Example (6.)a. above, showing the semantically and syntactically intransitive verb mimpi 'dream'. In this case, following the affixation of *–kan,* semantically and syntactically transitive verb mimpikan 'dream about' is created. In this case, the newly-licensed argument is again the direct object. This example further demonstrates that *maN–* is not necessary to mark semantically transitive verbs, even if they have been derived fiom lexically semantically intransitive verb roots.

(10.)a. ana? kete?tu mimpi

ana?	kete?	+itu	mimpi
child	small	+DEM	dream

'The child dreams.'

b. ana? kete?tu mimpikan eskrim

ana?	kete?	+itu	mimpi	*–kan*	es	krim
child	small	+DEM	dream	–APPLIC	ice	cream

'The child dreams about ice cream.'

The next example shows that the undergoer (i.e., the second argument of the verb) must be an entity (e.g., a noun phrase) and not a proposition, in order for the verb to be considered semantically and syntactically transitive and therefore marked as such. Sentences (11.)a. and b. demonstrate that the semantically (i.e.

lexically) intransitive verb *dʒandʒi* may not be marked with ***maN–***, even though it is followed by a proposition (*datəŋ* 'come').

(11.)a. ambo **dʒandʒi** datag
ambo **dʒandʒi datəŋ**
1 promise come
'I promise to come.'

b. * ambo **mandʒandʒi** datag
ambo **maN–** **dʒandʒi** datag
1 TRANS promise come
'I promise to come.'

However, in Sentence (11.)c., the **suffixation** of *–kan* licenses an additional argument, a direct object (effectively, the promisee); only now may the verb be marked with ***maN–*** as a semantically transitive verb.

c. ambo **mandʒandʒikanɲo** untua? datag
ambo **maN–** **dʒandʒi** ***–kan*** **+iɲo** untua? datag
1 **TRANS** – promise –APPLIC +3 for come
'I promise her to come.'

The affix *–kan* can also be used to derive ditransitive verbs (that is, verbs with a syntactic and semantic valence of three) **from** transitive verbs (with an original valence of two). Example (12.) demonstrates this phenomenon with a verb root which is transitive both semantically **(i.e.** lexically) and syntactically (in the sentence), ***pindʒam*** 'borrow'. Sentences **(12.)a.** and b. again demonstrate that the verb is optionally marked with *maN–*.

(12.)a. ambo **pindʒam** buku **si** ali
ambo **pindʒam** **buku** si ali
1 borrow book NM **Ali**
'I borrow Ali's book.'

b. ambo **mamindʒam** buku si ali
ambo **maN–** **pindʒam** **buku** si ali
1 **TRANS** – borrow book NM Ali
'I borrow Ali's book.'

The **affixation** of *–kan* in this instance produces a semantically-related derived verb with a valence of three, ***pindʒamkan*** 'lend'. In this case, therefore, *–kan* licenses an additional argument bearing a beneficiary theta role. Again, the derived verb may optionally be marked with ***maN–, as*** in Sentence **(12.)d.**

c. ambo **pindʒamkan** buku ka si ali
ambo **pindʒam** ***–kan*** buku ka si ali
1 borrow –APPLIC book to NM **Ali**
'I lend the book to Ali.'

d. ambo **mamindʒamkan** buku ka si ali

ambo	**maN–**	**pindʒam**	***–kan***	buku	ka si	ali
1	TRANS–	borrow	–APPLIC	book	to NM	Ali

'I lend the book to **Ali.'** .

Another example of this process is seen in **(13.),** with the semantically and syntactically **transitive** verb root pakaj 'wear'. Sentence **(13.)b.** again demonstrates the usage of the **passivizing prefix di–,** which elevates the original direct object of the verb, *bajdʒu* 'clothes' to subject position.

(13.)a. ambo pakaj **bajdʒu**

ambo	pakaj	**bajdʒu**
1	wear	clothes

'I wear the clothes.'

b. **bajdʒuko** dipakaj si upia?

bajdʒu	**+iko**	**di–**	pakaj	si	upia?
clothes	+DEM	PASS	wear	NM	**Upia**

'These clothes are worn by Upia.'

In Sentence **(13.)c.,** following the suffixation of *–kan,* a derived verb with the meaning 'help to wear' is created.[7] In this instance, the additional argument licensed by ***–kan,*** the third person pronoun *ɨɲo*, bears the theta role of causer.

c. **bajdʒuko dipakajkanɲo** ka si upia?

bajdʒu	**+iko**	**di–**	**pakaj–*kan***	**+ɨɲo**	ka	si	upia?
clothes	+DEM	PASS–**wear**–APPLIC		+3	**to**	NM	**Upia**

'Upia was helped by her to wear these clothes.'

In some instances, a slight semantic shift may occur following the **affixation** of ***–kan;*** the change in meaning may vary in relative degree, as the following two examples will demonstrate. Example (14.) demonstrates a slight semantic shift, while Example (15.) demonstrates one that is somewhat greater. Sentence **(14.)a.** shows the semantically and syntactically transitive verb *ʔiŋeʔ* 'remember'.

(14.)a. ambo **maŋiŋeʔ** kawan **lamo** ambo

ambo	**maN–**	**ʔiŋeʔ**	kawan	**lamo**	ambo
1	**TRANS**–	remember	**friend**	old	1

'I remember my old **friend.'**

Following the suffixation of ***–kan,*** a derived verb meaning 'remind' is created. Although the verb is now semantically **ditransitive,** its syntactic valence in this case remains at two, as the additional argument of the verb **(e.g.,** the entity to be remembered) is not here overtly expressed.

b. ambo **maŋiŋeʔkan** kawan **lamo** ambo

ambo	**maN–**	**ʔiŋeʔ**	***–kan***	kawan	lamo	ambo
1	TRANS–	remember	–APPLIC	**friend**	old	I

'I remind my old friend (not to forget about something).'

Example (15.)a. demonstrates the usage of a semantically and syntactically intransitive verb lari 'run'.

(15.)a. **ipo lari**

ipo	lari
3	**run**

'He runs (away).'

Following the affixation of ***–kan,*** a semantically and syntactically transitive verb with the shifted meaning 'steal' has been created. In Sentence **(15.)b.,** it is again necessary to mark the direct object with the demonstrative ***itu*** as the verb has not been marked with ***maN–***.

b. ipo larikan sapatutu

ipo	lari	***–kan***	**sapatu**	***+itu***
3	run	–APPLIC	shoe	+DEM

'He stole those shoes.'

Finally, parallel to the derivational properties of ***maN–***, ***–kan*** may be used to create semantically and syntactically transitive verbal forms from roots of other major word classes (namely, nominal, adjectival and prepositional roots). The usage of ***–kan*** for this purpose is likewise rather productive.

Sentence (16.) demonstrates the usage of the derived semantically and syntactically transitive verb ***mapabapkan*** 'cause (something to happen)'. The verb was derived **from** the affixation of ***–kan*** to the nominal root sabap 'cause, reason'. The meaning of the derived verb is extremely similar to the meaning of the root.

(16.) ambo **mapabapkanpo mati**

ambo	**maN–**	sabap	***–kan***	**+ipo**	**mati**
1	**TRANS-**	cause	–APPLIC	+3	dead

'I caused it to be dead.'

Sentence (17.) demonstrates the derived semantically and syntactically transitive verb ***maŋgadaŋkan*** 'raise, rear'. The verb has again been derived following the **affixation** of ***–kan,*** in this instance to the adjectival root ***gadaŋ*** 'big'. The meaning of the derived verb is again quite similar to the meaning of the root.

(17.) **ipo maŋgadaŋkan ana?**

ipo	**maN–**	**gadaŋ**	***–kan***	**ana?**
3	**TRANS-**	big	–APPLIC	child

'She raised her child.'

Lastly, Sentence (18.) demonstrates the semantically and syntactically transitive derived verb ***manaje?kan*** 'raise (up)'. The verb has been derived **from** a prepositional root in this case, naje? 'up'.

18. ambo manaje?kan bendera

ambo	maN–	naje?	–*kan*	bendera
1	TRANS–	up	–APPLIC	flag

'I raised the flag.'

5. Conclusion

This paper has argued for necessity of elucidating two distinct types of valence and transitivity, semantic valence/transitivity and syntactic valence/transitivity. Semantic valence reflects the number of semantic arguments that a verb may take in any given situation, while syntactic valence reflects the number of overtly morpho-syntactically expressed noun phrases licensed by the verb (and any valency-increasing verbal morphology) in a given sentence. Van Valin and La Polla's Role and Reference Grammar is one theory of syntax which does make this distinction clear.

Minangkabau provides empirical support for the usefulness and necessity of this distinction, following the different affixes which are used to reflect these concepts. The verbal prefix *maN–* is used primarily to mark semantic transitivity, while the verbal suffix *–kan* is used primarily to change syntactic transitivity. The distribution of these two affixes demonstrate that a separation of the notions of semantic and syntactic valences are a part of the understanding of the native speaker of Minangkabau.

These two affixes also have secondary derivational functions. The semantic transitivity marker *maN–* is also used to derive semantically intransitive verbs from nominal roots. The syntactic valency increaser *–kan* is productively used to derive verbs from nominal, adjectival and prepositional roots.

Notes

[1] These works include:
Koch, Peter. 1981. Verb – Valenz – Verfügung. Zur Satzsemantik und Valenz französischer Verben am Beispeil der Verfügungsverben. Heidelberg: Winter. Helbig, Gerhard. 1992. Probleme der Valenz und Kasustheorie. Tübingen: Neimeyer.
Many of these works related the approach of Lucien Tesnière's syntactically-centered research to Fillmore's Case-Theory.

[2] N represents a nasal consonant of indeterminate place of articulation; its place of articulation is not specified due to the following two morphophonemic processes: the nasal either assimilates its place to that of the following consonant (when it is a plosive) or is deleted entirely when it is followed by a liquid or vowel.

[3] Various authors (e.g. Croft 1991) have argued that the semantic valence of nouns is zero: 'VALENCY is defined here as INHERENT RELATIONALITY. A concept is inherently relational if its existence or presence requires the existence or presence of another entity... on this account, however, [a noun such as the English] *man* is not relational: the existence of a man does not imply the existence of another entity, in the way that an existence of an instance of [a verb such as the English] *hitting* does... thus, in terms of inherent relationality, the valency of common nouns is zero' (Croft 1991: 63).

[4] I have glossed the *–kan* suffix as APPLIC; however, it is true that this suffix is not exactly what is generally referred to as an applicative in other languages. However, I have chosen to use it here for lack of a more appropriate term.

References

Croft, William. 1997. *Syntactic categories and grammatical relations: the cognitive organization of information.* Chicago: *The* University of Chicago Press.

Payne, Thomas E. 1997. *Describing morphosyntax: a guide for field linguists.* Cambridge: Cambridge University Press.

Van Valin, Robert, and La Polla, Randy. 1997. *Syntax: structure, meaning and function.* Cambridge: Cambridge University Press.

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Preposition Stranding in English: Predicting Speakers' Behaviour

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1. Introduction

1.1 The phenomenon

In English PPs, the prepositions commonly precede their complements:

(1) He has paid [$_{PP}$ for the room].
(2) It is worth listening [$_{PP}$ to him].

There are cases, however, where this general word order preference is overridden in that the preposition is separated from its complement, In some instances, the choice of construction is optional:' either the preposition remains directly in front of its complement (i.e., the preposition is pied-piped; cf. the (a)-sentences) or it is strandeddeferredorphaned after its complement has been moved away (the (b)-sentences; the examples are taken from Takami 1992:1):

(3) a. [$_{PP}$ To whom]$_i$ did John give the book t_i? (in VP
b. Who$_i$ did John give the book [$_{PP}$ to t_i]? or in S)

(4) a. [$_{PP}$ Of whom]$_i$ did you see a picture t_i? (in
b. Who$_i$ did you see a picture [$_{PP}$ of t_i] ?

The (b)-sentences exhibit a phenomenon that has frequently been referred to as Preposition Stranding (henceforth PS).[2] From my point of view, there are three particularly interesting questions concerning PS:

I) When is it possible/grammatical to strand the preposition at all, and when is it not? This issue has been discussed in many studies. The approaches vary from purely syntactic ones (in which the argument-adjunct distinction, the notion of subjacency and the ECP have played a role; cf. Hornstein and Weinberg 1981; Chomsky 1981, 1986) over semantico-cognitive ones (Deane 1991, 1992; Kluender 1990) and discourse-functional ones (most notably Takami 1988, 1992) to psycholinguistic analyses (cf., e.g., Hawkins 1999 and the references cited therein).

2) Why does English offer the opportunity to strand prepositions at all? Given the following set of facts, it seems fairly strange that PS is possible and frequently found in English in the first place:

- PS in interrogatives is prescriptively considered ungrammatical;
- in general, English has a comparatively rigid word order allowing lit-

tle word order variation;

- filler-gap constructions are known for the processing load they impose on interlocutors compared to their pied-piped counterparts, which is why they are cross-linguistically quite rare: First, speakers need to process/produce the whole of the bridging structure while still having to produce the preposition. Second, hearers need to identify the gap to which the filler belongs (cf. Wanner and Maratsos 1978; Hawkins 1999): only after the final word of the sentence has been processed do they know that the sentence-initial NP is part of the PP (especially in the absence of overt case-marking). Moreover, hearers can sometimes choose one of several possible gap sites during online parsing: in *[NP* Which ***student] did you ask t Mary about t?,*** the hearer needs to relate the filler NP to one of possible gaps (indicated by the t's).

3) Which variables govern the choice of construction? More precisely, how important are these variables in determining the choice of construction? What is the reason for the distribution of constructions we find? On the basis of these variables, can we predict the constructional choices by native speakers of English?

It is question no 3 that I would like to focus on in this paper. But first it is necessary to introduce some terminology. In the remainder of this paper, the word order in the (a)-sentences is referred to as PPC (pied-piped construction) – the word order of the (b)-sentences is referred to as SC (stranded construction). Further, the utterance in which PS occurs is divided into several parts, as illustrated in (5) and (6).

(5) [NP Which posts]$_i$ did you get [NP an appointment [PP to t_i]]?
extracted phrase + head noun — bridging structure — extraction site

(6) [NP Which currency]$_i$ would you prefer to trade [PP in t_i]?
extracted phrase + head noun — bridging structure — extraction site

1.2 Hypotheses and Objectives

Various studies of word order alternations have shown that constructional choices are often influenced by the amount of processing that is necessary for the production of the utterance (cf. Gries 1999, 2000; Hawkins 1991, 1994, 1999; Arnold and Wasow 1996, 2000, to name but a few). While these theories share the idea that processing cost is an important determinant of constituent ordering, they also differ with respect to several parameters.

For instance, Hawkins' studies focus on the processing cost of the hearer by postulating that particular constituent orders make online phrase structure recognition more efficient. Arnold and Wasow (1996, 2000), by contrast, emphasise the speaker's perspective and, in Arnold and Wasow (2000), argue convincingly that it can be very difficult to decide on whose processing effort (the speaker's or the hearer's) is relevant as the empirical evidence supports both points of view. In

Gries (2000), I tend towards assigning higher priority to the speaker's perspective on production, which I will also do in the present work.

A second major difference is concerned with the determinants (or manifestations) of processing effort. While earlier studies by Hawkins have exclusively relied on morphosyntactic determinants of processing, Hawkins (1999) also embraces lexico-semantic variables. Arnold and Wasow (2000) include morphosyntactic variables (heaviness) as well as discourse-functional ones (newness). In this study, I suggest (as in Gries 2000) that the processing cost of utterances differing only in terms of their constituent orderings is determined by (or, at least, correlates with) an even larger variety of variables, namely phonological, morphosyntactic, semantic, discourse-functional and other variables (such as structural priming or speed of lexical retrieval).

Given the fact that filler-gap dependencies generally involve a large amount of processing cost, I propose that the choice of construction in the case of PS will also be sensitive to the processing cost incurred by the planning and production of the utterance. Since, the SC involves more processing cost I propose that the SC will be avoided in situations where its processing cost would add to an already high amount of processing effort. In such cases, the PPC would be chosen in order to minimise the overall processing effort. More succinctly, I propose that

- the PPC will be used in instances where the processing cost of the utterance is already high;
- the SC will be used in instances where the processing cost of the utterance is not too high.

Additionally, on a methodological level, I would also like to support my claim (cf. Gries 2000) that instances of syntactic variation are best analysed

(i) on the basis of naturally-occurring corpus data and

(ii) by using multifactorial statistics such as the General Linear Model (GLM), Linear Discriminant Analysis (LDA) and Classification and Regression Trees (CART).

As a basis for my analysis, I used a concordance program to search the British National Corpus (BNC) for instances of the two constructions; the following set of data was obtained:

	Written	Spoken	Row totals
PPC	122 (49.39%)	0 (0%)	122 (40.53%)
SC	125 (50.61%)	54 (100%)	179 (59.47%)
Column totals	247 (100%)	54 (100%)	301 (100%)

Table 1: Analysed Data from the BNC (Raw Frequencies + Column Percentages)

2. Previous Analyses

Previous analyses have shown that different groups of variables are relevant to whether PS is possible or not and the choice of construction; consider Table 2.

Value for PPC	Variable	Value for SC
dominant	dominance of extracted phrase (Erteschik-Shir and Lappin 1979)	
high	attention attraction of extracted phrase (Deane 1992)	
high	topicality of extracted phrase (Kuno 1987)	
high	semantic barrierhood of the extracted phrase (Kluender 1990)	low
high	entrenchment of the extracted phrase (Deane 1992)	
low	semantic barrierhood of the bridging structure (Kluender 1990)	high
short	syllabic length of the bridging structure (Quirk et al. 1985)	long
high	relation between light verb and extraction site (Deane 1992)	
low	attention attraction of the bridging structure (Deane 1992)	
VP-final	position of extraction site (Deane 1992)	
newer/more important than rest of S	cognitive status of extraction site (Takami 1992)	
high	attention attraction of extraction site (Deane 1992)	
low	entrenchment of the extraction site (Deane 1992)	
attribute or characteristic part	referent/denotatum of extraction site (Bolinger 1972)	
indefinite	definiteness of the extraction site (Deane 1992)	
	semantic case role of the extraction site (Deane 1992)	agent / subject
non-specific	specificity of the extraction site (Deane 1992)	
formal	formality of register (Quirk et al. 1985)	low / neutral
complex	syll. length of preposition (Quirk et al. 1985)	short
	frequency of preposition (Quirk et al. 1985)	frequent
temporal/abstract	meaning of preposition(al phrase) (Quirk et al. 1985)[4]	spatial, instrum., reason
passive	voice of the verb	active
strong	relation between preposition and its complement (Quirk et al. 1985)	loose
loose	relation between preposition and its verb (Quirk et al. 1985, Biber et al. 1999)	strong/close (prep. verbs)'

Table 2: Variables That Are Argued to Govern PS

The following comments on this inventory of variables are called for: First, the

analyses are commonly only based on intuitive and introspective examples and acceptability judgements: sometimes this is explicitly mentioned (cf. Takami 1992:5f.) – sometimes we are simply intended to follow the author's claims (cf., e.g., Deane 1992). Correspondingly, naturally-occurring data have hardly ever been used to validate prior analyses.

Second, most variables were investigated in isolation only so (i) no weightings of variables are offered, i.e. we cannot assess/quantify the degree of importance of any particular variable, and (ii) no interactions of variables can be considered.

Finally, let us turn to what are generally claimed to be the objectives of scientific research, namely description, explanation and prediction. As to description, no satisfactory data-based description has been offered so far. As regards explanation, with few exceptions (most notably Deane 1992, Hawkins 2000, Takami 1992), no explanatory account incorporating several analyses has so far been proposed. Finally, the prediction of native speakers' constructional choices has never been attempted although it is plausible to assume that prediction would be the most rigorous way of putting one's own analysis or that of others to the test.

3. Results (for Selected Variables Only)

So far, not all of the above variables have been investigated: the results still must be taken with a grain of salt. The following is a list of variables (and possible levels) entering into the analysis; the dependent nominal variable is of course the choice of construction (where PPC and SC are coded as 0 and 1 respectively).

- MODALITY: spoken, written;
- VERB: transitive, intransitive, prepositional, copula, phrasal-prepositional;
- VOICE: active, passive;
- PREP–SEM: prepositional semantics: abstract, metaphorical, spatial, temporal;
- AGENT–HEAD: agent, non-agent;
- CONCRETE–HEAD: abstract, concrete;
- FREQ_HEAD: infrequent, *frequent*;
- ENTRENCH–HEAD: entrenchment of the head noun according to Deane's (1992) entrenchment hierarchy;
- FREQ-PREP: frequency rank of the preposition (in each modality);
- LENGTH_BS: syllabic length of the bridging structure;
- LENGTH–PREP: syllabic length of the preposition;
- BARRIER-BS: barrierhood of the bridging structure;
- LENGTH-EP: syllabic length of the extracted phrase;
- BARRIER–EP: barrierhood of the extracted phrase.

3.1 Monofactorial Results

As a first and simple step, one can start by (i) calculating means of the ordinal/interval variables and (ii) crosstabulating the nominal variables for both con-

structions. For instance, the means (and standard deviations) of Length–BS of the PPC and the SC are 13.3 (8.7) and 4.5 (2.3) respectively. This difference is highly significant (t_{Welch}=10.95; df=133; $p_{2\text{-tailed}}$<0.001 ***), showing that longer bridging structures result in a preference for PPC whereas shorter bridging structures are more likely to license SC; this result can be summarised using a simple coefficient of correlation (r_{pb}=-0.6; t=-12.92; p<0.001 ***). Analogous calculations can be done for all measurement variables. Consider, e.g., Table 3.

	Transitive	Intransitive	Prep.	Phrasal-prep.	Copula	Totals
PPC	73	24	4	0	21	122
SC	38	65	14	6	56	179
Totals	111	89	18	6	77	301

Table 3: Distribution of Constructions Relative to VERB

For such a table, a Chi-square value and a corresponding coefficient of correlation can be computed in order to determine whether VERB contributes to the choice of construction. In this case, the results also deviate highly significantly from the (according to H_0) expected results (χ^2=48.33; df=4; p<0.001 ***).[6] In order, however, to avoid going through all individual results at such a tiring level of specificity, the following table (continued overleaf) summarises the results for all variables investigated (sorted according to strength of impact of the variables).

Variable	Correlational Strength with PS
LENGTH_BS	r_{pb}=-0.6; p<0.001 ***
BARRIER_BS	r_{pb}=-0.594; p<0.001 ***
VERB	ϕ=0.4; p<0.001 ***
MODALITY (written=0; spoken=1)	ϕ=0.386; p<0.001 ***
VOICE (act.=0; pass.=1)	I$=-0.28; p<0.001 *
LENGTH-PREP	r_{pb}=0.246; p<0.001 ***
ENTRENCH–HEAD	τ=0.14; p<0.001 ***
CONCRETE_HEAD (abstract=0; concrete=1)	ϕ=0.14; p<0.016 *
BARRIER_EP	r_{pb}=0.13; p=0.029 *
AGENT_HEAD (no agent=0; agent=1)	ϕ=0.115; p=0.054 ns
PREP–SEM	ϕ=-0.1103; p=0.301 ns
FREQ_HEAD (rare=0; frequent=1)	I$=-0.096; p=0.107 ns
FREQ-PREP	τ=0.035; p=0.362 ns
LENGTH–EP	r_{pb}=-0.003; p=0.959 ns

Table 4: Monofactorial Results

Less technically, in the monofactorial analysis the bridging structure seems to be the most important determinant of the constructional choice. Given the high correlation between LENGTH–BS and BARRIER–BS (r=0.92; p<0.001 ***), the closeness of the morphosyntactic length and the semantic barrierhood is little surpris-

surprising. Equally obvious is that the preposition does not seem to too relevant to the constructional choice contrary to what was suggested by some authors.' On the whole, the following overall ranking of variables is found: bridging structure – verb – head noun – preposition.

3.2 The Problem of Interactions

While the preceding investigation goes beyond many previous studies (by precisely measuring the importance of the variables for the first time), it is still far from complete. Knowing monofactorial preferences for constructions does not necessarily enable us to predict speakers' choices since in many (if not most) discourse situations, we will find conflicting preferences of variables. For instance, we know that transitive verbs prefer PPC while concrete head nouns prefer SC. How do speakers, then, decide in the cases given in (7) (transitive verb + a concrete head noun) and (8) (intransitive verb and abstract head noun)?

(7) a. Which half do you want the marmalade on?
b. On which half do you want the marmalade?

(8) a. Which sport, apart from rowing, could you do that in?
b. In which sport, apart from rowing, could you do that?

This is a difficult question, since

1) in monofactorial analyses, interactions of variables cannot be identified;
2) for purely mathematical reasons, the absolute values of the correlation coefficients must not be compared directly.

Thus, two possible strategies are proposed: one can resort to truly multifactorial procedures (cf. section 3.3) or one can use multidimensional crosstabulation to determine the frequencies of the two constructions in all cases of conflicting variable values/levels. For instance, multidimensional crosstabulation shows that of all 301 cases, there are 30 cases like (7) (i.e. where VERB: transitive contrasts with CONCRETE–HEAD: concrete), of which 19 exhibit PPC and 11 exhibit SC (this distribution is not significant: $p_{\text{binomial test}}=0.1$). In other words, in a direct comparison, VERB: transitive wins out in getting its constructional preference recognised, but fails to do so significantly.[8] This can be done for all contrasting pairs in order to determine a ranking of variable strengths. Since this (i) is quite a laborious task and (ii) still does not enable us to predict speakers' choices, however, an analysis using multifactorial techniques is probably more rewarding.

3.3 Multifactorial Results

One might wonder how many variance one's present state of the art can account for and, at the same time, how the variables' influence is altered once they are all considered simultaneously (the only cognitively realistic avenue of research). 'The General Linear Model (GLM) answers exactly these questions. The multiple correlation coefficient (with correction for shrinkage according to Wherry) for all above variables without interactions is quite high and highly significant: $R_c=0.635$; $F_{18,273}=17.01$; $p<0.0001$ ***).[9]

More interesting for our present purposes, however, is to try to predict speakers' choices. A linear discriminant analysis (LDA) takes as input a set of independent variables and produces as output a categorial choice of the level of the dependent variable (STRUCTURE). Using cross-validation, a priori predictions of speakers' choices in one's analysis can be tested for accuracy while, at the same time, the analysis as a whole can be subjected to the most rigorous test conceivable, namely whether it enables the researcher to actually predict what native speakers do. The results of the LDA for our data set can be summarised as follows.

The set of variables entering into the analysis discriminates highly significantly between the two constructions (canonical R=0.746; χ^2=219.48; df=19; p<0.001 ***). More interestingly, the constructional choices can be classified correctly (post hoc) in 89.7% of all cases. The most essential result, however, is that the a priori prediction accuracy (as determined by the so-called leave-one-out method) is 86.1%, i.e. 86.1% of the constructional of native speakers in actual discourse choices can be predicted correctly.[10] What is more, the predictions are arrived at by assigning to each variable a numerical weighting/loading, which can be interpreted as reflecting the importance of a variable in discriminating between PPC and SC. Table 5 provides the weightings resulting from the present analysis.

Variable	Factor Loading	Choice of Construction
barrierhood of the bridging structure	-0.701	high values for these variables ⇒ PPC low values for these variables ⇒ SC
length of the bridging structure	-0.69	
transitive verbs	-0.426	
voice of the verb	-0.258	
temporal meaning of the preposition	-0.089	according to the low factor loadings (−0.223 ≤ loading ≤ 0.223),[11] these variables do not discriminate significantly between the two constructions
frequency of the head noun	-0.087	
metaphorical of the preposition	-0.009	
abstract meaning of the preposition	0.014	
length of the extracted phrase	0.036	
spatial meaning of the preposition	0.04	
agentivity of the head noun	0.104	
phrasal-prepositional verbs	0.114	
frequency of the preposition	0.115	
barrierhood of the extracted phrase	0.119	
prepositional verbs	0.126	
concreteness of the head noun	0.132	
copula as verb	0.153	
entrenchment of the head noun	0.165	
intransitive verbs	0.165	
length of the preposition	0.218	
modality	0.382	high/low value ⇒ SC/PPC

Table 5: Factor Loadings of the Discriminant Analysis

It is obvious that, of all variables investigated, the bridging structure, the verb and the modality influence PS most strongly. The hypothesis of the influence of processing effort on the choice of construction seems to be borne out since the length and the barrierhood of the bridging structure relate straightforwardly (along the lines discussed in section 1.1) to the morphosyntactic and semantic processing effort respectively necessary for the production of the utterance.

As to the influence of transitive verbs on PS, one might wonder whether this finding supports the role of processing put forth, but there is an obvious explanation for that, too: as opposed to all other kinds of verbs investigated here, transitive verbs require a direct object, i.e. at least an additional NP. This NP will obligatorily add to the length and the barrierhood of the bridging structure as in, say, *To whom did John give [NP the book]?* or *Who did John give [NP the book] to?* and thereby yield a preference for the PPC. A look at our data supports this hypothesis; consider Table 6.

	Transitive (111 sentences)	Not transitive (190 sentences)	Total
LENGTH–BS: Mean (Std. dev.)	10.9 (7.7)	6.5 (6.4)	8.1 (7.2)
BARRIER–BS: Mean (Std. dev.)	4 (2.9)	2.5 (2.7)	3 (2.9)

Table 6: The Effect of Transitivity on LENGTH–BS and BARRIER–BS

The average length and barrierhood of the bridging structure is much higher for transitive verbs than for non-transitive verbs; the differences are; according to Welch's *t* test, highly significant and the influence of transitive verbs can, thus, be explained in terms of processing effort.

The effect of verb voice on PS is more difficult to relate to processing cost: when the main verb is in the passive, we find SC significantly less than expected. At this preliminary stage, I can only suggest somewhat tentatively that the non-canonical passive is more difficult to process than the canonical active so that both passive and SC is avoided by speakers. Admittedly, compared to the other more solid arguments, this is fairly vague and requires further investigation.

The strong influence of the modality, however, is most probably not due to a causal influence on processing – rather, it is more likely due to writers' prescriptive knowledge/awareness (never use a preposition to end a sentence with!).

4. Summary / Conclusions

We have seen how the analysis of syntactic variation can benefit from the use of rigorous corpus-based and (multifactorial) statistical investigation. While such techniques to analysing variation data were quite common in the 70s (cf. the notion of variable rules employed by Cedergren, Labov, Sankoff and others), nowadays the analysis of variation does not (at least to my mind) utilise the power of these techniques frequently enough. This is all the more surprising since even introductory textbooks (!) to corpus linguistics as well as other publications

have argued time and again that monofactorial studies often do not suffice:

> [...] straightforward significance or association tests, although important, cannot always handle the full wmplexity of the data. The multivariate approaches [...] offer a way of looking at large numbers of interrelated variables and discovering or confirming broader patterns within those variables. (McEnery and Wilson 1997:82)

> Although linguists ... typically do not use statistical techniques, the approach just illustrated fits conceptually with correlational models using multiple regression analyses ... [i.e.,] with a more complex design we can obtain information that is not readily available by armchair analysis. (Bates and McWhinney 1982:181)

In this respect, I would thus argue that, methodologically at least, there is a great deal that we as linguists can learn from other behavioural sciences as far as data collection, hypothesis testing and exploratory statistical techniques are concerned. I would also hope that a shift to more rigorous testing of the sort detailed above would render linguistic findings more objective and reliable than has been the case in the preceding 40 years of predominantly intuitive/introspective analyses of acceptability/grammaticality judgements (cf. Schütze 1996 for a similar line of reasoning, though not in the direction of multifactorial corpus analyses).

In the case at hand. the most crucial determinants of PS seem to be the processing effort associated with the two word orders and the knowledge of prescriptive grammar rules. On a more general note, the findings concerning processing effort lend themselves to being integrated into psycholinguistic theories based on interactive activation networks such as Bates and MacWhinney's (1982, 1989) Competition Model, where variables with different constructional preferences compete with each other: the notion of interaction as dealt with in section 3.2 operationalises the notion of conflict validity, the prior probabilities of the two constructions in the LDA/CART analyses correspond to resting levels / baseline activations, and the variables' weightings could readily be interpreted as association strengths between variables and the constructional choice. However, further research is necessary to integrate more of the previous findings into psycholinguistic theory.

5. Notes

[1] Here and in the rest of the paper, the expressions ***choice of construction*** or ***speakers' decisions*** are not to be understood as implying that there is always a conscious choice on the part of the speaker.

[2] In the psycholinguistic literature, PS is just one instance of what is frequently referred to as filler-gap dependencies. However, this paper is only concerned with PS in interrogatives; I will leave aside instances of pseudo-passives(such as ***The problem had been accounted for.)***, Tough-Movement (such as ***Last night was difficult to sleep through)*** and relative clauses (They ***ate what they had paid for***).

[3] Barrierhood is an index accounting for open/closed-class words and frequency.

[4] Biber et al. (1999:106) provide a list of prepositions that can usually be stranded ***(about, after, at, by, for, from, in, like, of, on, to, with)*** while some others are only rarely attested ***(against, around, into. near, off, through, under, up)***. However, on the whole, Quirk et al's (1985) generalisation seems to hold as many of these prepositions are indeed used to denote spatial configurations or to introduce an insbument. Note also that there are some prepositions that are hardly ever deferred: ***since, during, until*** (Quirk et al. 1985:817).

[5] Unfortunately, the identification of intransitive prepositional verb is far from straightforward. So far, no clear-cut tests have been devised to distinguish intransitive prepositional verbs (as in John asked *for* some details) from verbs that are simply followed by a PP (John *left* before noon). One test that has been proposed (cf. Collins Cobuild on CD-ROM) is that only prepositional verbs license the SC, but of course this test could not be used here since it is not independent of the focus of the present paper. For traditional treatments of this question, cf. Quirk et al. (1985:1165ff.) and Biber et al. (1999:406, 414). The from my point of view most promising approach is illustrated in Hawkins (2000:241ff.).

[6] Note however, that the overall significant deviation mainly results from the effects found for transitive verbs as can be inferred from the individual cells' contributions to Chi-square.

[7] LENGTH–PREP has resulted in a significant effect, but the actual difference is so small as to be meaningless (mean LENGTH–PREP for PPC: 1 syllable; mean LENGTH–PREP for SC: 1.2 syllables).

[8] This strategy is very similar to the operational definition of the notion of conflict validity as proposed by Bates and MacWhinney (1989).

[9] With interactions the model results in a multiple correlation coefficient larger than 1 (not defined), so problems of multicollinearity still need to be addressed.

[10] There are researchers who might object to the application of an LDA to my data since the data do not meet the requirement of a multivariate normal distribution, which is why distribution-free techniques such as CART should have been used. However, while many researchers tend to emphasise the importance of distributional assumptions, there is also a number of scholars who argue that, in practice, these assumptions are not as essential as they might seem on a purely mathematical basis (cf. Winer et al. 1991:5). Second, it has even been claimed that there is no test that reliably identifies multivariate normal distributions (cf. Bortz 1999:435). Lastly, CART and LDA differ in that the former includes all variables in a sequential fashion whereas the latter does so simultaneously (and, thus, more cognitively realistically). Nevertheless, it might very well be the case that these reasons do not satisfy truly mathematically-oriented researchers. I have, therefore, also analysed my data using the CART module of Statistica 5.5; the algorithms used therein are based on CART by Breiman et al. (1984). The results are very similar: the classification accuracy obtained is 90.4%, the prediction accuracy for a small part of the corpus data is 87.5%, and the six most important variables are BARRIER–BS, LENGTHBS, FREQ_PREP, MODALITY, LENGTH–EP and VOICE. Thus, even a distribution-free technique does not invalidate the result of the LDA.

[11] The question may arise as to what is the motivation for the cut-off point of ±0.223. Basically, the choice of a cut-off point is in general an arbitrary one – I have chosen ±0.223 because this rules out factor loadings contributing less than 5% to the variance ($0.223^2 \approx 0.05$).

6. References

Arnold, Jennifer E., and Thomas Wasow. 1996. ***Production Constraints on Particle Movement and Dative Alternation.*** Poster presented at the CUNY Conference on Human Sentence Processing.

Arnold, Jennifer E., Thomas Wasow, Anthony Losongco, and Ryan Ginstrom. 2000. "Heaviness vs. Newness: The Effects of Structural Complexity and Discourse Status on Constituent Ordering", ***Language,*** 76:28-55.

Bates, Elizabeth, and Brian MacWhinney. 1982. "Functionalist Approaches to Grammar", in: Wanner Eric, and Lila R. Gleitman (eds.). ***Language Acquisition: The State of the Art.*** Cambridge: Cambridge University Press, p. 173-218.

Bates, Elizabeth, and Brian MacWhinney. 1989. "Functionalism and the Competition Model", in: MacWhinney, Brian, and Elizabeth Bates (eds.). ***The Crosslinguistic Study of Sentence Processing.*** Cambridge: Cambridge University Press, p. 1-73.

Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad, and Edward Finegan. 1999. ***Longman Grammar of Spoken and Written English.*** Harlow, Essex: Pearson Education.

Bolinger, Dwight D. 1972. "What Did John Keep the Car that Was in?", *Linguistic Inquiry* 3:109-114.

Bortz, Jürgen. 1999. *Statistik für Sozialwissenschaftler*. 5th ed. Berlin, Heidelberg, New York: Springer.

Breiman, L., J. H. Friedman, R. A. Olshen, and C. J. Stone. 1984. *Classification and Regression Trees.* Monterey, CA: Wadsworth and Brooks/Cole Advanced Books and Software.

COBUILD on CD-ROM. 1994. HarperCollins Publishers Ltd.

Deane, Paul D. 1988. "Which NPs Are there Unusual Possibilities for Extraction From?", in: Macleod, Lynn et al. (eds.). *Proceedings of the Twenty-fourth Annual Meeting of the Chicago Linguistics Society.* Chicago: Chicago Linguistics Society, p. 100-111.

Deane, Paul D. 1991. "Limits to Attention: A Cognitive Theory of Island Phenomena", *Cognitive Linguistics* 2:1-63.

Deane, Paul D. 1992. *Grammar in Mind and Brain.* Berlin, New York: Mouton de Gruyter.

Erteschik-Shir, Nomi, and Shalom Lappin. 1979. "Dominance and the Functional Orientation of Island Phenomena", *Theoretical Linguistics* 6: 41-86.

Gries, Stefan Th. 2000. *Toward! Multifactorial Analyses of Syntactic Variation: The Case of Particle Placement.* PhD Dissertation, University of Hamburg.

Hawkins, John A. 1999. "Processing Complexity and Filler-Gap Dependencies across Grammars", *Language* 75:244-285.

Hawkins, John A. 2000. "The Relative Ordering of Prepositional Phrases in English: Going Beyond Manner-Place-Time", *Language Variation and Change* 11:231-266.

Hornstein, N., and Amy Weinberg. 1981. "Case Theory and Preposition Stranding", *Linguistic Inquiry* 12:55-92.

Kluender, Robert. 1990. "A Neurophysiological Investigation of Wh-Islands", in: Hall, Kira et al. (eds.). *Proceedings of the Sixteenth Annual Meeting of the Berkeley Linguistics Society.* Berkeley: Berkeley Linguistics Society. p. 187-204.

Kuno, Susumo. 1987. *Functional Syntax: Anaphora, Discourse, and Empathy.* Chicago: University of Chicago Press.

McEnery, Tony, and Andrew Wilson. 1997. *Corpus Linguistics.* Edinburgh: Edinburgh University Press.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. 1985. A *Comprehensive Grammar of the English Language.* London: Longman.

Radford, Andrew. 1997. *Syntax: A Minimalist Introduction.* Cambridge: Cambridge University Press.

Ross, John Robert. 1967. *Constraints on Variables in Syntax.* PhD Dissertation, M.I.T, Cambridge, MA.

Schütze, Carson T. 1996. *The Empirical Base of Linguistics: Grammaticality Judgements and Linguistic Methodology.* Chicago: University of Chicago Press.

Takami, Ken-Ichi. 1988. "Preposition Stranding: Arguments against Syntactic Analyses and an Alternative Functional Explanation", *Lingua* 76: 299-335.

Takami, Ken-Ichi. 1992. *Preposition Stranding: From Syntactic to Functional Analyses.* Berlin, New York: de Gruyter.

Winer, B.J., Donald R. Brown, and Kenneth M. Michels. 1991. *Statistical Principles in Experimental Design.* 3rd ed. New York: McGraw-Hill.

The Acquisition of Gricean Maxims[1]

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This paper considers the acquisition of Gricean maxims of conversation, and argues, based on data from a pair of two-year-old twins, that children as young as 24 months old understand the requirements of the maxims and generally abide by them. It is claimed that some apparent violations of the maxims in the conversation of young children are the result of the linguistic and cognitive limitations of the subjects. More surprisingly, however, a number of maxim violations by the subjects are shown to be instances of intentional flouting of the maxims for strategic purposes. Finally, this paper also discusses the role of parents in teaching children about socially appropriate ways in which the maxims may be violated.

1. Introduction

Grice (1975) proposes that conversation is governed by what he terms the Cooperative Principle, which he states as follows:

> "Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged." (p. 45)

He then proposes four specific maxims which follow from this general principle: maxims of quantity (how much is said), quality (the truth of what is said), relation (the relevance of what is said) and manner (the clarity of what is said).

Grice does not claim that such maxims are always followed in conversation. Rather, he observes that maxims may fail to be fulfilled in conversation, and that such failures may entail particular meanings. He proposes four reasons why a speaker might not fulfill a maxim:

> "1. He may quietly and unostentatiously VIOLATE a maxim; if so, in some cases he will be liable to mislead.[2]
> 2. He may OPT OUT from the operation both of the maxim and the CP. He may say, indicate or allow it to become plain that he is unwilling to

cooperate in the way the maxim requires. **He** may say, for example, I ***cannot say more; my lips are sealed.***

3. He may be faced by a **CLASH:** He may be unable, for example, to fulfill the first maxim of Quantity … without violating the second maxim of Quality….
4. He may FLOUT a maxim; that is, he may **BLATANTLY** fail to fulfill the maxim.… This situation is one which gives rise to conversation implicature; and when a conversational implicature is generated in this way, I shall say that maxim is being **EXPLOITED."** (Grice 1975:49)

When adults violate the maxims, then, the violations are typically regarded as falling into one of these four categories. When young children violate the maxims, however, other explanations are possible. Pellegrini et al. (1987) suggest that violations may occur because children do not understand the nature of the maxims, or because, although they understand the maxims, they are unable to abide by them for some other reason.

There is little prior research on the acquisition of the Gricean maxims. Pellegrini et al. (1987) studied conversations between parents and children ages 2-4 to see the extent to which the children violated the maxims, and concluded that children 2 and older do not frequently violate the maxims of quality and manner, but that violations of the maxims of quantity and relevance occur more frequently, especially among the younger children. In addition, Ninio and Snow (1996:150) also note that young children have frequent difficulty abiding by the maxims of quantity and relevance.

Given the results of this prior research, this paper focuses in the next two sections on the acquisition of the maxims of quantity and relevance. However, the data under consideration provide interesting insight into the acquisition of the maxim of quality, and so this maxim is discussed in the final section of the paper.

The data analyzed in this paper come from my twin daughters, Jennifer and Allison, who were just 24 months old at the time of the study. The twins were videotaped while at home interacting with other family members.[3] The data include 79 utterances from Jennifer, and 87 utterances from Allison.

2. Maxim of Relation

The maxim of relation claims that conversational contributions must be relevant. As one might predict, based on prior research, the subjects of my study did not always abide by the maxim of relation. However, providing an exact count of how often they violated the maxim is somewhat difficult. Grice himself notes that there is a problem with reconciling the notion of relevance with the fact that topics are legitimately changed in the course of conversations. For the purposes of this paper, utterances were classified as satisfying the maxim if they were

clearly relevant to the preceding utterance, or if they represented topic changes at appropriate points in the conversations.[4] Utterances which did not satisfy either of these criteria were classified as violations of the maxim. Following these criteria, about 87% of Jennifer's utterances and about 86% of Allison's utterances satisfied the maxim. This high proportion of compliance with the maxim suggests that the subjects do understand that conversational contributions should generally be relevant. Of particular interest, then, are the instances of violations, and how they should be explained. Consider the following interaction:

Example 1.

1. MOTHER: How's your water?
2. **ALLISON:** Tummy.
3. MOTHER: In your tummy?
4. JENNIFER: I have tummy too!
5. ALLISON: Here's my tummy!
6. MOTHER: Yeah, that's right.
7. ALLISON: Tummy, tummy, tummy, timmy.

Utterances by Jennifer and Allison in lines 4, 5, and 7 all appear to abide by the maxim of relation, since they relate to the topic "tummy" established in line 2. However, Allison's utterance in line 2 was classified as a violation of the maxim, since it does not seem to represent a relevant answer to the question posed in line 1. If the subjects do indeed understand that conversational contributions should be relevant, why does Allison violate relevance here? A possible explanation can be found in the linguistic limitations of the subjects. At the time of this study, the speech of both subjects was largely telegraphic, including few function words. Allison's utterance "Tummy" may in fact have been intended to mean "In my tummy", as I suggest in my response in line 3. Under this interpretation, the violation of relation is only apparent, and due to linguistic limitations, rather than a failure to understand that conversational contributions should be relevant.

Many of the other utterances I classified as violating the maxim are also amenable to an analysis in terms of the linguistic limitations of the subjects rather than a failure to understand the maxim of relation. However, there are a few cases which appear to require a different explanation. Consider, for example, the highlighted utterances in the following three dialogues:

Example 2.

(Jennifer crying.)

1. MOTHER: What happened?
2. ALLISON: I pinched Jennifer.
3. MOTHER: You need to say sorry.
4. **ALLISON: I hit water.**
5. MOTHER: Say sorry, Allison.

Example 3.

(Jennifer scratches Peter's face.)

1. MOTHER: Jennifer, can you say sorry? Can you say sorry, Jennifer?
2. JENNIFER: This. (*holding* out block)
3. PETER: Don't change the subject.

Example 4.

(Allison kicks over Peter/Jennifer's tower)

1. PETER: Oooh.
2. MOTHER: Can you say sorry to Peter?
3. ALLISON (to FATHER): I kicked Peter.

In each dialogue, the highlighted utterance is a clear violation of relevance. Unlike the prior examples, these do not appear to be unintentional or only apparent violations of the maxim, due to linguistic limitations. Instead they appear to be intentional floutings of the maxim.

Note that in each example the utterance violating the maxim of relation follows a request for an apology, and seems to have the strategic goal of avoiding having to make an apology. At the time of this study, the subjects were very resistant to making apologies, and used a range of strategies, such as covering their faces or running away, to avoid having to apologize. Their ability to exploit the maxim of relevance for the same purpose seems to provide strong evidence of their understanding of how the maxim works in conversation.

3. Maxim of Quantity

Grice defines the maxim of quantity as follows (Grice 1975:45):

1. Make your contribution as informative as required (for the current purposes of the exchange).
2. Do not make your contribution more informative than is required.

As noted by Pellegrini et al. (1987:94), young children are more likely to violate this maxim by giving too little information than too much, since their utterances are typically rather short. Thus, for my initial analysis, I classified utterances as satisfying the maxim if they provided enough information for the listener to understand their intended meaning.[5] Under this criterion about 83% of Jennifer's utterances and about 89% of Allison's utterances satisfied the maxim of quantity.

This high degree of compliance suggests that the subjects understand that conversational contributions should provide an appropriate quantity of information. If this is so, however, what account can be given of the maxim violations?

Just as with violations of the maxim of relation, some violations of the maxim of quantity can be attributed to linguistic limitations. However, many of the violations of this maxim seem to be better explained in terms of cognitive limitations, in particular in terms of the subjects' difficulty in taking the perspective of the other participants in the conversation. Consider, for example, the following utterance from Allison:

Example 5.

Allison: It's on couch. These are mine. These are mine, Mum.

I classified this utterance as a violation of quantity because the utterances did not provide enough information for me to establish referents for the pronouns "it" and "these". I was not in the room with Allison when she said this, and so could not see the objects she was refemng to. Allison's failure to abide by the maxim of quantity in this instance does not, however, require that we abandon our claim that she understands the maxim. Rather, we can explain her behavior if we assume that she simply did not understand that my field of view was not the same as hers.[6]

Another instance in which the maxim of quantity is violated is in the first utterance of the following conversation. The utterance does not give enough information to enable the hearer to understand the apparent intended meaning, "'There's an airplane outside".

Example 6.

1. **JENNIFER: Outside.**
2. **MOTHER:** [What's outside? ([= overlapping utterances)
3. PETER: [I did it!
4. MOTHER: Very good. What's outside?
5. **JENNIFER:** Airplane.

The apparent violation in line 1 may again be due not to an inability to understand the requirements of the maxim, but rather to a failure to take into account the perspective of the listener. In this dialogue, Jennifer may assume that everyone else is paying attention to the noise she has heard, and that it can therefore be assumed as background information, or an established topic. Under this assumption, "outside" would constitute her comment on the topic, and would be appropriate in terms of quantity from Jennifer's point of view.

An interesting question which arises from this discussion is how children acquire the ability to judge how much information they must include in their utterances. It seems likely that acquisition of this skill is directly helped by parental responses to violations. In my data, when the quantity maxim appeared to be violated, the listener typically either asked a clarification question, or suggested what the missing information might be. In this way the child received direct feedback showing that insufficient information had been provided. In some cases a dialogue was then co-constructed, in which, over

several utterances, an adequate amount of information was provided, thus providing a model of how the maxim should be satisfied.

My focus so far in this section has been on violations of part 1 of the maxim of quantity, as we typically expect young children to provide too little rather than too much information in their utterances. However, one characteristic of children's speech, their frequent use of repetition, might be viewed as a violation of part 2 of the maxim, since such repetitions provide a lot of redundant information. Consider for example the following conversations:

Example 7.

1. JENNIFER: Light broken. Light broken. Light broken. Light broken. Light broken. Light broken. Light broken. Light broken.
2. MOTHER: Yes, it is. Hmmm. That's right.

Example 8.

1. ALLISON: Tape broken. Tape broken. Tape broken.
2. MOTHER: What?
3. ALLISON: Tape broken.
4. MOTHER: It's broken?
5. ALLISON: Yeah.

In both data sets, the subject repeats the same utterance several times. Should this be viewed as an indication that the child does not understand part 2 of the maxim? Interestingly, in all these examples the repetition ceases when an adult response indicates that the child's utterance has been understood. Data of this type were also noted by Ochs and Klein in their analysis of the conversation of Ochs' twin sons. They observed that "when verification was not expressed by a co-conversationalist, the child would solicit it. The child would repeat his utterance over and over until it was acknowledged." (Ochs and Klein 1975: 35-6) Such repetitions then do not seem to result from a failure to understand the maxim of quantity, but rather indicate the child's realization that in conversation utterances should normally receive some kind of response, and their insistence that such a response should be provided.

An apparently different type of repetition occurs in the following dialogue. The background for the dialogue is that Allison has been asked to give back Jennifer's teddy. Allison does so, but in a rather rough way, throwing the teddy at Jennifer.

Example 9.

1. ALLISON: I throw it.
2. FATHER: That was nice. You took it to Jennifer. **Very** good.
3. ALLISON: I throw it.
4. FATHER: That was good to give it to Jennifer.
5. ALLISON: I throw it.
6. FATHER: It was very nice of you to take that to Jennifer.

7. ALLISON: I throw it.
8. FATHER: Yes you took it to Jennifer. You were very nice.
9. ALLISON: I throw it.
10. FATHER: Yeah, that was a nice way to give it to Jennifer.
11. ALLISON: I throw it.
12. FATHER: Uh huh. It was nice to give it to Jennifer that way.
13. ALLISON: I throw it.
14. FATHER: Uh huh.
15. ALLISON: I throw it.
16. FATHER: Jennifer really appreciated that. Jennifer said thank you.
17. MOTHER: Yeah, Jennifer did say thank you.

Unlike the previous examples, in this case Allison does receive an adult response immediately after her first utterance. Despite this, however, she repeats her utterance seven times, with each repetition being followed by a similar parental response. This example does seem to represent a violation of the maxim of quantity. Again, however, it does not result from a failure to understand the nature of the maxim. The father's response in this case is intentionally designed not to acknowledge Allison's boasting about her bad behavior. Allison, however, wants her boast to be acknowledged, and so the responses she receives are unsatisfactory from her point of view. Her repetitions seem intended to elicit, through persistence, a more satisfactory response. In a sense, then, these repetitions are not so different from the ones in examples 7 and 8 discussed above. In neither case do they result from a lack of understanding of the maxim of quantity.

4. The maxim of Quality

The final maxim I discuss here is the maxim of quality, which is defined as follows (Grice 1975:46)

1. Do not say what you believe to be false.
2. Do not say that for which you lack adequate evidence.

I focus here on part 1 of the maxim, which requires that speakers tell the truth. This maxim is violated very rarely in my data. Overall Jennifer violates it only once, and Allison only twice. Even in situations where one might expect an older child to violate the maxim to avoid taking blame, as in line 2 of the following dialogue, Allison answers truthfully.

Example 10.

(Jennifer crying)

1. MOTHER: What happened?
2. ALLISON: I pinched Jennifer.

The very small number of violations of the maxim suggests that the girls understand the requirements of this maxim also. Given this, it is particularly interesting to consider the three instances of maxim violation.

In this first example, Allison is holding a teddy belonging to Jennifer. The bold-faced utterances represent violations of the maxim of quality:

Example 11.

1. ALLISON: That's my teddy.
2. MOTHER: Is that your teddy? .... Whose teddy is that Allison?
3. PETER: Jennifer's.
4. ALLISON: That's my teddy
5. ... (Dialogue on unrelated topic.)....
6. ALLISON: It's Daddy's.
7. FATHER: No, that's not my teddy, Allison. Whose teddy is this?
8. JENNIFER: Jennifer.
9. ALLISON: Jennifer.

The violation here certainly seems to be intentional and strategic. There are various types of evidence which support this interpretation, some of which can only be gleaned from the video, and not from the transcription. They include the following:

- the repetition of the utterance in line (4), even after her assertion has been questioned (line 2) and contradicted (line 3)
- the repetition with variation in line (6)
- the heavy emphasis on the possessive pronoun "my" in lines 1 and 4
- the persistence in the topic, continuing it even after a lengthy break for discussion of another topic
- her satisfied facial expression

It seems, then, that in this exchange Allison is intentionally flouting the maxim. At the time of this dialogue, Allison was perhaps feeling left out, as she was not involved in a story that was being read to her sister, and it seems likely that her violations were designed to challenge her parents to some kind of reaction, and thus get their attention.

A second instance of intentional violation of the maxim of quality comes in the following interaction. In this case Jennifer and Allison have both been pretending to knock over a tower built by their brother, and finally Allison does knock it over.

Example 12.

1. MOTHER: Oh Allison.
2. ALLISON: Daddy! Let me! Let Peter build it!

3. MOTHER: Do you know what? You are the one who knocked that tower over, Allison.
4. **ALLISON:** Daddy knocked over that tower.
5. MOTHER: No he didn't. Do you know who knocked that tower over, Allison? Who knocked that tower over?
6. ALLISON: Allison.

Allison's violations in lines 2 and 4 of this dialogue appear to be designed to avoid taking responsibility for her actions.

The final instance of violation of the maxim of quality comes in the following dialogue. Prior to this interaction Jennifer has accidentally knocked over part of Peter's tower, and has then intentionally knocked over the rest of the tower.

Example 13.

1. JENNIFER (smiling): Sorry Peter.
2. (Jennifer scratches Peter on the face)
3. MOTHER: Jennifer, can you say sorry? Can you say sorry, Jennifer?
4. JENNIFER (holding out block): This
5. PETER: Don't change the subject.
6. **JENNIFER (smiling,** looking at her mother): Sorry Peter.
7. MOTHER: Say it to Peter and don't smile.

Line 5 seems to represent a clear violation of the maxim of quality, since paralinguistic features make it clear that Jennifer is not in fact sorry: she is speaking in a cheerful voice, looking at her mother rather than her brother, and has a smile on her face.

This interaction is particularly interesting because of what it shows about how children learn the social rules regarding appropriate violation of the maxim of quality. If the child is not in fact sorry, as seems likely here, the child cannot satisfy the parent's demand for an apology without violating the maxim of quality.[7] The parent's insistence that the child must apologize (line 2) and must make the apology seem sincere (line 6) forces the child to violate the maxim of quality, and thus teaches the child that in certain situations it is socially appropriate, or even necessary, to violate the maxim of quality. This contrasts with the parental response in examples 11 and 12 above in which the child's violation of the maxim was immediately pointed out, and the child was questioned until she ultimately produced an utterance which did not violate the maxim. This difference is due to the fact that the violations in the earlier dialogues were not socially appropriate.

In fact, the acquisition of the maxim of quality seems to differ from the acquisition of the other maxims discussed. When children first begin to speak (i.e. in the one-word stage), they frequently violate the maxims of quantity and relevance, but use language in a literal way that never violates the maxim of

quality. As they get older, and more accomplished linguistically, their violations of the maxims of quantity and relevance decrease in number (Pellegrini et al. 1987), but conversely their violations of the maxim of quality increase. Data such as these suggest how parents play a role in teaching their children the cultural norms about how and when it is acceptable to violate this maxim.

5. Conclusion

The analysis presented in this paper has shown that very young children appear to understand the maxims of relation, quantity and quality, and generally abide by them in their conversation. Of the violations that do occur, some are due to linguistic or cognitive limitations of the subjects. However, a number of intentional maxim violations were discovered in the data. These violations show the considerable skills of even very young children in manipulating the norms of conversation. Finally, the paper provides examples of how parental responses aid children in learning not only how to satisfy the maxims, but also how to violate them in appropriate circumstances.

Notes

[1] I would like to thank Sandra Silberstein, Bill Dolan and the audience at WECOL 2000, especially Ritva Laury, for helpful comments on this paper. All errors are of course my responsibility.
[2] In the remainder of the paper, violate (lower case) will not be used in this technical sense, but rather to denote failure to adhere to a maxim for any reason.
[3] The interactions involve Jennifer and Allison (pseudonyms for the twins), their older brother Peter, and their parents.
[4] A topic change which interrupted an adjacency pair, for example, would represent a violation of the maxim.
[5] Since I was the listener in this data, I could use my own intuitions to judge whether I understood the utterance. When other speakers were the audience, I used cues from their response to determine whether they had understood the utterance. Note that I excluded from consideration cases in which the utterances were incomprehensible because of phonological or grammatical errors.
[6] A similar inability to take the perspective of another person is shown when children of this age hold objects up to the telephone to show them to the person on the other end.
7 Thanks to Sandra Silberstein for drawing my attention to this aspect of the data.

References

Grice, H. P. (1975). "Logic and conversation", in P. Cole and J. Morgan (eds.) *Syntax and Semantics 3: Speech Acts.* Academic Press. Pp. 41-58.

Ninio, A. and Snow, C. (1996). *Pragmatic Development.* Westview Press.

Ochs Keenan, E. and Schieffelin, B. (1983). "Topic as a Discourse Notion: a study of topic in the conversations of children and adults." In *Acquiring Conversational Competence.* Routledge and Kegan Paul.

Pellegrini, A., Brody, G. and Stoneman, Z. (1987). "Children's Conversational Competence with their Parents." *Discourse Processes,* 10: 93-106.

Lexicalization Patterns of Motion Verbs in Korean

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1 Introduction

The purpose of this paper is to investigate the lexicalization patterns of motion verbs in Korean by examining the conflation patterns of semantic elements in monomorphemic and multimorphemic motion verbs[i] and to compare the semantic difference between them.

Motion events, in general, consist of four major semantic elements: Figure, Path, Ground, and Motion. Figure (F) is a moving or conceptually movable object. Ground (G) is a reference-frame, or a reference object stationary within a reference-frame, with respect to which the Figure's path or site is characterized. Path (P) is a **path/course** followed by the Figure. Motion (M) is the presence per se of motion or locatedness in the event (Talmy **1985, 1991, 2000).**

Consider examples (1) (nonagentive motion) and (2) (agentive motion) below:

(1) a. The rock rolled down the hill.
b. **pawi-ka** entek-eyse kwull-e nayli-ess-ta.
rock-NOM hill-from roll-C move **down-PST-DEC**[ii]
'(lit.) The rock moved down from the hill by rolling.'

In (1a), the rock is the Figure, rolled is the Motion verb including both Motion and Manner, down is the Path, and the hill is the Ground in the motion event. In (Ib), however, the Motion component is conflated with Path and Manner is expressed separately. Thus, ***kwull-*** only expresses the Manner of the motion and the final motion verb nalyli- contains both Motion and Path. The same conflation pattern is found in an agentive motion as in the examples of (2):

(2) a. I rolled the keg into the storeroom.
b. na-nun **cakun** namwuthong-ul cecangsil-ey **kwull-i-e** neh-ess-ta.
I-TOP keg-ACC storeroom-LOC roll-CAU-C put in-PST-DEC
'(lit.) I inserted the keg in the storeroom by rolling it.'

In example (2a) above, I is the Agent, ***rolled*** is the Motion verb which expresses both Manner and Motion, ***the keg*** is the Figure, ***into*** is the Path, and ***the storeroom*** is the Ground of the motion event. In (2b), however, as in (1b) the Motion component is conflated with Path and Manner is expressed separately. Thus, ***kwull-*** only expresses the Manner of the Motion and the final caused motion verb ***neh-*** contains both Motion and Path.

With respect to Korean motion verbs, I will make the following arguments: First, Deixis-conflation (the conflation of Motion with Deixis in the verb root) is also one type of Path-conflation pattern in Korean[iii]; second, Conformation-conflation (the'conflation of Motion with Conformation in the verb root) applies to monomorphemic motion verbs and light verb constructions, whereas Deixis-conflation pattern applies to a Deictic verb in serial verb constructions (SVCs); third, as for the Path of motion, the Conformation-conflation pattern covers a minimal Path, whereas the Conformation Path in the Path verb and the Deixis Path conflated in the Deictic verb in SVCs cover a minimal Path plus some extended translational motion.

This paper will proceed in the following way. In section 2, the typology of lexicalization patterns of motion verbs of the languages in the world, including Korean, will be discussed. In section 3, the status of the Path verbs preceding a Deictic verb in serial verb constructions will be considered. In section 4, the semantic difference in cognition between simplex and complex motion verbs will be treated.'' Last, section 5 will include the conclusion of this paper.

2 Typology of Lexicalization Patterns of Motion Verbs

The languages of the world can be classified into three major types, depending on the semantic element that is conflated with Fact of Motion in the verb root (Talmy 1985, 1991,2000). Type 1 is a Co-event language. In this type, the Co-event such as precursion, enablement, manner, cause or concomitance is conflated with Fact of Motion in the verb root. The languages and language families that belong to this type are Indo-European languages except for Romance, Finno-Ugric, Chinese, Ojibwa and Warlpiri. Type 2 is a Path language. In this type, Path notion is conflated with Fact of Motion in the verb root. The languages that belong to this type are Romance, Semitic, Korean, Japanese, Turkish, Tamil, and Polynesian. Type 3 is a Figure language. In this type, the moving object is conflated with Fact of Motion in the verb root. This type is actually very rare. The American Indian languages such as Atsgewi and Navajo are of this type.

Consider a motion event consisting of a framing event and a co-event as in example (3):

(3) [I $_{A}$MOVED the ball into the box] WITH-THE-CAUSE-OF [I kicked it].'
a. English: I kicked the ball into the box.
b. Spanish: **Metí** la pelota a la **caja** de una patada.
'I inserted (*MOVED-in) the ball to the box by a kick.'
c. Korean: na-nun kong-ul baks-ey ***cha***(-se) neh-ess-ta.
I-TOP ball-ACC box-LOC kicking(-by) put.in-PST-DEC
'I inserted ($_{A}$MOVED-in) the ball in the box by kicking it.'

In **(3a),** the Co-event, **i.e.,** Cause, is conflated with Fact of Motion in the verb root kicked and the Path notion is separately expressed as into. But in Spanish, Path is conflated with Fact of Motion in the verb root and the Co-event (Cause here) is expressed separately as an adverbial phrase. Similarly, in Korean, the Co-event verb cha- is expressed in a gerundive form and precedes the motion verb neh-, which includes both Motion and Path components. Thus, English is a Co-event language and Spanish and Korean are of a Path language type.

From a typological point of view, Korean is basically classified as a Path language (Talmy: 1985, 1991,2000, Choi and Bowerman: 1991, Kim: 1997). In Korean, however, Path is not always conflated with Fact of Motion in the verb root. Hence I will classify the motion verbs in Korean into three typical patterns as in (4):

(4) a. Class 1: Simplex Motion Verbs
b. Complex Motion Verbs
① Class 2: **SVCs** including a Path **Satellite/Path** verb^{n}
② Class 3: Sino-Korean Motion Light Verb Constructions **(LVCs)**

In Class 1, Path and Motion are conflated in a monomorphemic verb root. In Class 2, a Path verb as a satellite or a full motion verb may precede a Deictic verb and the resultant form consists of a Path satellitelverb and a Deictic verb as in (5):

(5) ku-nun pang-eyse ***na***(**Path** satellite)-ka-ass-ta.
he-TOP room-from out-go-PST-DEC
'He went out of the room.'

In Class 3, the Path notion is expressed together with Motion in the same morpheme but, unlike Class 1, this morpheme necessarily accompanies another bound morpheme such as Ground or Path as in (6): .

(6) **ku-ka** **kyosil-ey** ip-cang-ha-ess-ta.
he-NOM classroom-LOC ***move*** *in*(M&P)-*place*(G)-do-PST-DEC
'(lit.) He moved into the **classroom/** He **came/went** into the classroom'

Class 1 is of a monomorphemic motion verb type and Class 2 and Class 3 are of a multimorphemic motion verb type. In Korean, multimorphemic motion verbs are more productive than monomorphemic motion verbs.

Now we can raise the following questions regarding Korean motion verbs: First, what is the status of the Path verb preceding a Deictic verb, i.e., is it a Path satellite or a full-motion Path verb?; second, what is the semantic difference between a simplex motion verb and a complex motion verb? In the next two sections, I will try to answer these two questions.

3 Path Verbs or Path Satellites?

What is the status of the Path verb preceding a Deictic verb in serial verb constructions? To answer this question, first, two previous studies are compared. Look at the examples from Choi & Bowerman (1991: 88-89).

(7) Choi & Bowerman (1991)

a. Spontaneous motion (intransitive)

tul-e-	ka-	'go into/enter'
move in-C	go-	
[Path]	[Motion+Deixis]	

b. Caused motion (transitive)

neh-	'insert'
insert-	
[Motion+Path]	

They argue that Korean has a mixed conflation pattern. In other words, in spontaneous motion, the Path verb expresses just a Path notion and Motion is conflated with Deixis as in (7a), whereas in caused motion, Motion is conflated with Path as in (7b), hence a mixed conflation pattern.

Now consider the analysis by Kim (1997):

(8) Kim (1997)

ttwi-e-	tul-e-	o-	
run-C-	move in-C-	come	'run into a place toward the speaker'
[Manner]	[Path+Motion]	[Deixis]	

Unlike Choi & Bowerman (1991), Kim claims that Korean employs the same conflation pattern for expressions of both spontaneous and caused motion, i.e., in either case, Motion is conflated into the Path verbs and that the final Deictic verb adds only direction to the preceding Path verb as in (8). For the evidence of her analysis, she presents the 'Se-Insertion' rule[4]. According to her, Path verbs do not allow 'se-insertion' after the Path verb preceding a Deictic verb but Manner verbs allow this rule. In the former, the Path verb is the main verb and in the latter the Deictic verb is the main verb. This analysis, however, must be wrong in two respects. First, some Path verbs also permit 'se-insertion' before a Deictic verb. Consider the examples below:

(9) a. ku-ka cha-eyse nayli-e-o-ass-ta.
he-NOM car-from (move)down-C-come-PST-DEC
'He got off the bus (≠ He got off the bus and came).'
b. ku-ka cha-eyse nayli-e-se-o-ass-ta.
he-NOM car-from move down-C-and-come-PST-DEC
'He got off the bus and came (≠He got off the bus).'

As the examples above show, 'se-insertion' applies to some contexts. Second, a Deictic verb can stand alone without a Path verb or a Manner verb as in (10a) but a Path verb or a Manner verb cannot stand alone without a Deictic verb to describe a translational motion as in (10b):[viii]

(10) a. ku-ka pang-ey o-ass-ta.
he-NOM room-LOC come-PST-DEC
'He came to the room.'
b. ku-ka pang-ey ***tul-/*ttwi-ess-ta.**
he-NOM room-LOC *move **in-/*run-PST-DEC**[ix]
'He ran into the room.'

Let us consider some more examples. As is argued above, to express actual motion, a Path verb as a satellite or a Manner verb or both of them must combine with a Deictic verb:

(11) a. *ku-ka kyosil-ey ***tul*-ess-ta.**
he-NOM classroom-LOC ?-PST-DEC
b. **?ku-ka** kyosil-ey ***ttwi-e tul*-ess-ta.**[x]
he-NOM classroom-LOC **run-C** ?-PST-DEC
'He *suddenly/surprisingly/threateningly* ran into the **classroom(≠He** came into the classroom by running).'
c. **ku-ka** kyosil-ey ***ttwi-e tule-o*-ass-ta.**
he-NOM classroom-LOC run-C into-come-PST-DEC
'(lit.)He came into the classroom (by) **running/he** ran into the classroom.'

Example (11b) seems to be unproblematic but it has a different meaning from (11c). Thus, the usual way of speaking is (11c), **i.e.,** the construction of 'Manner-Path-Deictic verb.'

Now we can further classify the Path notion into three main components: the Vector **(arrival,** traversal, and departure), the Conformation (a geometric complex), and the Deictic ('hither' and 'hence') (Talmy: 2000). Based on this classification, I argue that in **SVCs** including both a Path verb and a Deictic verb, the lexicalization pattern should be 'Conformation **– Motion+Deixis.'** Look at the example below:

(12) Im (2000a):

ttwi-e- tul-e- *o-*

run-C- into come 'run into a place toward the speaker'

[Manner] [Path(Conformation)][Motion+Path(Deixis)]

In this SVC, the final Deictic verb is the main verb, as is claimed by Choi & Bowerman (1991: 88-89) and Talmy (2000: 57). The Conformation Path satellite precedes the Deictic verb, which in turn contains the Deixis Path. As a result, the whole construction expresses a complex Path, i.e., 'Conformation + Deixis.' Likewise, in a simplex spontaneous motion verb, Korean employs the same conflation pattern: Motion is conflated with Path in the verb root as in (13):

(13) ku-ka kang-ul kenne-ess-ta.

he-NOM river-ACC move **across/*cross*-PST-DEC**

'He crossed the river.'

Therefore, we can say that Korean employs the same conflation pattern, i.e. the conflation of Motion with Path, i.e., either Conformation or Deixis, both in a spontaneous motion and in a caused motion.

Now we need to make a distinction between a Path satellite and a Path verb before a deictic verb: the former includes a Path notion alone while the latter has both a Path component and a Motion component. They can be differentiated from each other by binary features of semantic elements as in (14):

(14) a. Path satellites: [-Motion, +Path] b. Path Verbs: [+Motion, +Path]

As the examples in (15) below show, na- 'out' is a complete Path satellite. Hence. (15a) is good but we cannot say something like (15b):

(15) a. ku-ka kyosil-eyse **na-ka/o-ass-ta.**

he-NOM classroom-from **out-go/come-PST-DEC**

'He **went/came** out of the classroom.'

b. ***ku-ka** kyosil-eyse na-ass-ta.

he-NOM classroom-from out- PST-DEC

In contrast, motion verb ***kenne-ta*** is a full-motion verb even when it is followed by a Deictic verb. As in (16b), it can stand alone without a Deictic verb but the simplex form and a complex form of this motion verb have different meanings as in (16a,b), which will be discussed in detail in the next section:

(16) a. ku-ka kang-ul kenne-ka-ass-ta.

he-NOM river-ACC cross-go-PST-DEC

'He went somewhere crossing the river.'

b. ku-ka kang-ul kenne-ess-ta.
he-NOM river-ACC cross-PST-DEC
'He crossed the river (≠ He crossed the river and went somewhere).'

In conclusion, tul- **'in/into'** and *na-* 'out' have completely changed into Path satellites, whereas kenne- 'cross' is a full-motion verb including both Path and Motion components.[xi]

4 Semantic Difference in Cognition between Simplex and Complex Motion Verbs

When both a simplex motion verb and a complex motion verb, consisting of a Path satellite and a Deictic verb, are allowed, we find there is some semantic difference in meaning between them. First, we will consider the Path verb which is in transition to a Path satellite and its corresponding complex form consisting of its simplex form and a Deictic verb.

(17) a. ku-ka bus-eyse nayli-n-ta.
he-NOM bus-from move down-PRS-DEC
'(lit.) He is moving ***down from*** the **bus/** He is getting off the bus.'
b. ku-ka bus-eyse nayli-e-ka-n-ta.
he-NOM bus-from (move) down-C-go-PRS-DEC
'(lit.) He is going down from the **bus/** He is getting off the bus.'

We assume that there is some difference in cognition between **(17a)** and **(17b)**: First, nayli- in **(17a)** is neutral as to the location of the speaker but ***nayli-e-ka-*** in **(17b)** relates to the location of the speaker (with the speaker in the bus); second, in **(17a)** the speaker regards the whole motion as just one motion process, **i.e.,** vertical motion from the bus to the ground but in **(17b),** the speaker recognizes the motion as a complex one-the Figure is getting off (moving down) the bus by taking some steps or actions. Further examples are presented with regard to this:

(18) a. koyangi-ka thakca-ey ttwi-e **oll-a-ka-ass-ta.**
cat-NOM table-LOC run-C **(move)up-C-go-PST-DEC**
'(lit.) The cat went up the table by **running/** The cat ran onto the table.'
b. koyangi-ka thakca-ey ttwi-e **oll-ass-ta.**
cat-NOM table-LOC **jump-C** move **up-PST-DEC**
'(lit.) The cat moved up the table by **jumping/** The cat jumped onto the table.'

It seems that in **(18a),** the cat took several steps to go up the table,. whereas in **(18b),** the **cat's** jumping onto the table is a one-process motion, **i.e.** an upward

vertical motion. For the same reason, **(19a)** is fine but in **(19b)** we cannot expect that one can go onto the top of a hill by one jump, hence **(19b)** is unacceptable.

(19) a. ku-ka entek-ul ttwi-e **oll-a-ka-ass-ta.**
he-NOM hill-ACC run-C **(move)up-C** go-PST-DEC
'(lit.) He went up the hill by **running/** He ran up the hill.'
b. ***ku-ka** entek-ul ttwi-e **oll-ass-ta.**
he-NOM hill-ACC jump-C move up-PST-DEC
'*He moved up the hill by **jumping/*He** jumped onto the hill.'

Likewise, in **(20a)** he took several steps to go upstairs but in **(20b)** we cannot think that he could move upstairs by one jump.

(20) a. ku-ka il-chung-eyse i-chung-ulo ttwi-e 011-a- ka-ass-ta.
he-NOM one-floor-from two-floor-to run-C **(move)up-C-go-PST-DEC**
'(lit.) He went up to the second floor from the first floor by running.'
b. ***ku-ka** il-chung-eyse i-chung-ulo ttwi-e **oll-ass--ta.**
he-NOM one-floor-from two-floor-to **jump-C** move **up-PST-DEC**
'*(lit.) He moved up to the second floor by jumping.'

Now compare the motion of moving up with that of moving down as in (21):

(21) a. ku-ka i-chung-eyse il-chung-ulo nayli-e-ka-n-ta.
he-NOM two-floor-from one-floor-to **(move)down-C-go-PRS-DEC**
'(lit.) He is going down from the second floor to the first floor.'
b. ***ku-ka** i-chung-eyse il-chung-ulo nayli-n-ta.
he-NOM two-floor-from one-floor-to move down-PRS-DEC
c. ku-ka i-chung-eyse il-chung-ulo ***ttwi-e*** nayli-n-ta.
he-NOM two-floor-from one-floor-to **jump-C** move down-PRS-DEC
'He is ***jumping down*** to the **first** floor from the second floor.'
d. ku-ka i-chung-eyse il-chung-ulo ttwi-e nayli-e-ka-n-ta.
he-NOM two-floor-from one-floor-to run-C **(move)down-C-go-PRS-DEC**
'He is ***running*** down ***to the first floor from the secondfloor.***'

In **(21a)** he is taking many steps to go downstairs but the motion along the stairs in **(21b)** cannot be a one-process motion and so it sounds unacceptable. Unlike **(20b), (21c)** is OK. However, **(21c)** and **(21d)** have different meanings: The motion in **(21c)** is executed by means of jumping, **i.e.,** a vertical motion, where the motion from the second floor to the first floor is regarded as one unit of motion, whereas the motion in **(21d)** is achieved in terms of running down the stairs from the second floor to the first floor and thus the motion from the second floor to the first floor is divided into many successive units of motion.

Thus, we can make a distinction between a one-process motion and a complex-process motion as follows:

(22) a. A one-process motion is present when the whole motion is regarded as a single unit of motion.
b. A complex-process motion is present when the whole motion is composed of more than one single process.

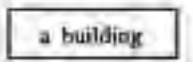
Now we will consider the difference in meaning between a full-motion simplex Path verb and a corresponding complex Path verb composed of its simplex form and a Deictic verb. Three pairs will be considered.

cina-ta vs. cina-ka-ta: In English, motion verb pass can be used for the motion of either 'pass something' or 'go somewhere past something.' In Korean, however, we have different lexicalization patterns for these two different motions, which is proved by the examples in (23) and (24):

(23) a. He passed the building.
b. ku-ka ku kenmwul-ul cina-ass-ta.
he-NOM the building-ACC pass-PST-DEC
'He passed the building.'
(24) a. He passed the building to the station.
b. ku-ka yek-ulo ku kenmwul-ul ***cina-ka-ass-ta***[xii].
he-NOM station-to the building-ACC pass-go-PST-DEC
'(lit.) He went to the station past the building'
c. ****ku-ka*** yek-ulo **ku** kenmwul-ul cina-ass-ta.
he-NOM station-to the building-ACC pass-PST-DEC

In Korean, cina-ta means just the minimal-Path motion **across/along** the Ground as in Figure 1 and ***cina-ka-ta*** expresses the motion of a minimal Path plus some more motion **before/after/both** before and after the Ground **as** in Figure 2, whereas pass in English can cover either the motion of the minimal Path **across/along** the Ground or the motion of the entire Path of the minimal Path plus some more motion. The same explanation is true of verbs such **as** nem-ta vs. nem-e-ka-ta and kenne-ta vs. kenne-ka-ta.

(25) a.



kenmwul-ul **cina-ta**
'to pass a building'
Figure 1

b.

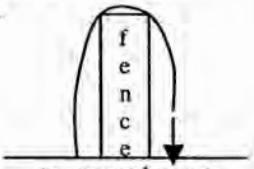
kenmwul-ul ***cina-ka-ta***
'go somewhere past a building'
Figure 2

nem-ta vs. *nem-e-ka-ta*: Like the pairs of *cina-ta* and *cina-ka-ta*, the simplex form *nem-ta* 'move over a (high) place' expresses just the minimal-Path motion over the Ground as in Figure 3 and the complex form *nem-e-ka-ta* 'go somewhere moving over a (high) place' means the motion of a minimal Path plus some more motion before/after/both before and after the Ground as in Figure 4, whereas *move over* in English can cover either the motion of the minimal Path over the Ground or the motion of the entire Path of the minimal Path plus some more motion in the motion event.

(26) a. ku-ka tamcang-ul nem-ess-ta.
he-NOM fence-ACC move over-PST-DEC
'He moved over the fence.'

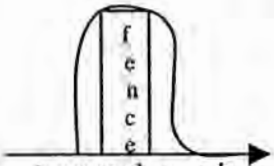
b. ku-ka ku cip-ey tamcang-ul nem-e-ka-ass-ta/*nem-ess-ta.
he-NOM the house-to fence-ACC move over-C-go-PST-DEC/ *move over-PST-DEC
'(lit.) He went to the house moving over the fence/ He moved over the fence to the house.'

(27) a.



tamcang-ul *nem*-ta
'move over a fence'
Figure 3

b.



tamcang-ul *nem-e-ka*-ta
'go somewhere moving over a fence'
Figure 4

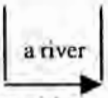
kenne-ta vs. *kenne-ka-ta*: The simplex form *kenne-ta* 'cross' applies to the motion of the minimal Path as in Figure 5, whereas the complex form *kenne-ka-ta* 'go somewhere crossing something' applies to the entire motion, including both the motion across the Ground and some more motion before/after/both before and after the Ground as in Figure 6. *Cross* in English, however, can cover either the motion of the minimal Path or the motion of the entire Path of the minimal Path plus some more motion. Consider the examples in (28).

(28) a. ku-ka kang-ul kenne-ess-ta.
he-NOM river-ACC cross-PST-DEC
'He crossed the river.'

b. ku-ka mancwu-lo kang-ul *kenne*-(-e)-*ka*-ass-ta/**kenne*-ess-ta.
he-NOM Manchuria-to river-ACC cross-(C)-go-PST-DEC/*cross-PST-DEC
'(lit.)He went to Manchuria crossing the river.'

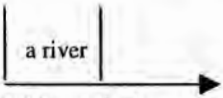
c. ku-ka na-eykey kang-ul *kenne*-(e)-*o*-ass-ta/**kenne*-ess-ta.
he-NOM me-to river-ACC cross-(C)-come-PST-DEC/*cross-PST-DEC
'(lit.) He came to me crossing the river.'

(29) a.



kang-ul *kenne*-ta
'cross the river'
Figure 5

b.



kang-ul *kenne-ka*-ta
'go somewhere crossing the river'
Figure 6

Based on these observations, we can differentiate a minimal-Path motion from an extended translational motion as in (30).

(30) Minimal-Path Motion vs. Extended Translational Motion
   a. A Minimal-Path Motion is the motion executed just as long as the Ground.
   b. An Extended Translational Motion is the motion executed along/across/over the Ground plus some more motion before/after/both before and after the Ground.

5 Conclusion

The Conformation Path is conflated with Motion in the verb roots of simplex motion verbs, whereas the Deixis Path is conflated with Motion in the Deictic verbs in SVCs with either Path verbs changing into Path satellites or being full-motion verbs.

Simplex Conformation-conflation motion verbs relate to one unit of motion. In contrast, the complex forms composed of a Conformation Path satellite plus a Deictic verb relate to a complex unit of motion.

For an extended translational motion, the motion verb must be a complex form of a Deictic verb preceded by a Path verb as in SVCs. For a minimal-Path motion, the simplex Conformation-conflation pattern is preferred.

Notes

[i] Portions of this paper were presented at the 10th Japanese/Korean linguistics Conference at UCLA.

[ii] Abbreviations: ACC (ACCUSATIVE), CAU (CAUSATIVE), DEC (DECLARATIVE), LOC (LOCATIVE), NOM (NOMINATIVE), PRS (PRESENT), PST (PAST), and TOP (TOPIC). An asterisk [*] indicates that the sentence is ungrammatical and a question mark [?] is used to indicate the awkwardness of the sentence.

[iii] In section 3, Path is classified into three subcomponents: Conformation, Vector and Deixis.

[iv] We can make a distinction between simplex motion verbs and complex motion verbs. Simplex motion verbs are verb roots, whereas complex motion verbs are, in general, composed of a Path satellite/verb and a Deictic verb.

[v] The subscript "A" means that the motion is an agentive one.

[vi] "Satellite" is the grammatical category of any constituent other than a noun-phrase or prepositional/ postpositional-phrase complement that is in a sister relation to the verb root. It relates to the verb root as a dependent of a head (Talmy 2000: 102).

[vii] '-se' means 'by means of/ by' or 'and', depending on the context. For the meaning of the former, only a Manner verb allows this rule. For the meaning of the latter, both a Manner verb and a Path verb allow this rule).

[viii] The author classifies Path verbs which cannot stand alone without a Deicitc verb as Path satellites.

[ix] In (10b), instead of *tul-*, its honorific form *tusi-* is acceptable. When the LOC *–ey* 'to' is replaced with the LOC *–eyse* 'at', the sentence is also acceptable but the resultant sentence does not express a translational change, i.e., actual motion, but just the activity/manner of the agent.

[x] *ttiw-e-tul-* has an idiomatic meaning like *move in suddenly/surprisingly/threateningly* or *plunge into water*.

[xi] *nem-* 'go over' and *cina-* 'pass' are also full-motion verbs. *olu-* 'move up' and *nayli-* 'move down' seem to be in transition to Path satellites.

[xii] In (24b), the complex verb form may be separated into two simplex forms by *yek-ulo*, i.e. *ku-ka ku kenmwul-ul cina yek-ulo ka-ass-ta*.

References

Choi, S., and M. Bowerman. 1991. "Learning to express motion events in English and Korean: The influence of language-specific lexicalization patterns", *Cognition*, **41**: 83-121.

Im, S. 2000a. *Realization of Motion Events in Korean*. Ms., State University of New York, Buffalo.

Im, S. 2000b. "Characteristic Lexicalization Patterns of Motion Events in Korean", Paper presented at the 10th Japanese/ Korean Linguistics Conference at UCLA.

Kim, Y. 1997. "Verb Lexicalization Patterns in Korean - with Focus on Motion Conflation in Complex Verb Constructions", *Japanese/Korean Linguistics*, **VI**: 495-511. Stanford: Stanford Linguistics Association.

Lee, S. 1992. *The Syntax and semantics of serial verb constructions*. Doctoral dissertation, University of Washington.

Slobin, Dan I. 1996b. "Two ways to travel: Verbs of motion in English and Spanish", *Grammatical Constructions: Their Form and Meaning*, Matthew Shibatani and Sandra A. Thompson (eds.): 195-217. Oxford: Oxford University Press.

Slobin, Dan I., and Hoiting, Nini. 1994. "Reference to movement on spoken and signed languages: Typological considerations", *Proceedings of the Twentieth Annual Meeting of the Berkeley Linguistics Society*: 487-505. Berkeley: Berkeley Linguistics Society.

Talmy, Leonard. 1985. "Lexicalization patterns: Semantic structure in lexical forms", *Language Typology and Semantic Description, Vol 3: Grammatical Categories and the Lexicon*, Timothy Shopen (ed.): 36-149. Cambridge: Cambridge University Press.

Talmy, Leonard. 1991. "Path to realization: A typology of event conflation", *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society*: 480-519. Berkeley: Berkeley Linguistics Society.

Talmy, Leonard. 2000. *Toward Cognitive Semantics*. Volume 1: *Concept structuring systems*; Volume 2: *Typology and process in concept structuring*. Massachusetts: MIT Press.

Ingredients of Universal Quantifiers and Polarity Items *

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1. Introduction

It is one of the basic facts about language that at least two items are needed in order for such conjoiners as *and* and *or* to be used. Based on this fact, we provide answers to the following pervasive questions in the syntax of Korean: (i) What are the ingredients of universal quantifiers in Korean? (ii) What are the ingredients of the polarity items? And (iii) what is the relationship between these two seemingly unrelated groups?

We analyze the universal quantifier (henceforth UQ) *amwu-na* 'anyone' and the negative polarity item (henceforth NPI) *amwu-to* 'anyone.' Several assumptions will be made for this purpose. First, the NPI *amwu-to* is best characterized if decomposed into [*amwu* + *-to*], of which [*amwu*] is an indefinite and [*-to*] is a conjunctive conjoiner. Second, the indefinite *amwu* is placed on the bottom of a pragmatically defined scale that represents significance, degree, and/or amount, along the lines of Fauconnier (1975). Third, the UQ *amwu-na* is decomposed into [*amwu* + *-na*], of which [*-na*] is a disjunctive conjoiner.

Given that both [*-to*] and [*-na*] are conjoiners, it follows that *amwu-to* and *amwu-na* presuppose the existence of another member of the set of entities and/or properties denoted by the predicates that is to be conjoined by these morphemes. Based on these facts, we show that the semantics of the polarity *amwu-to* and the UQ *amwu-na* are fully predicted from the compositional meanings of their ingredients, thereby offering a uniform analysis of them. In doing so, we show that Lee and Horn's (1995) claim that *any* is an indefinite + *even* is too strong. Instead, we argue that *any* (and its Korean counterpart) is an indefinite plus a conjunctive/disjunctive conjoiner and that the relevant pragmatic scale itself is presupposed by the meanings of these conjoiners.

2. Polarity Scale and Polarity Item Licensing

2.1. Polarity item licensing in English

Analyzing superlatives, Fauconnier (1975) proposes a scalar theory of NPI licensing.[1] Consider the following examples:

(1) a. *John cannot solve *even* the most difficult problem.
b. John cannot solve the most difficult problem.
c. John cannot solve *even* an easy problem.

The question that we would like to raise is why (1a) is unacceptable, in sharp contrast to the acceptable (1c). To account for the unacceptability of (1a), we need to discuss the semantics of the focus element *even*.

However, before proceeding further, let us make sure that superlative expressions like *even the most difficult problem* are at the top of the polarity scale, given in (2) below:

(2) most difficult

least difficult (=easiest)

Notice that these expressions are acceptable only in affirmative sentences, as shown in (3):

(3) John can solve *even* the most difficult problem.

What this means is that an element consisting of [*even* + an expression at the top of the scale] requires affirmation. This is a case of so-called positive polarity item (henceforth PPI) licensing. Put another way, (1a) is unacceptable, because the PPI *even the most difficult problem* is not licensed: it should be used in an affirmative sentence.

However, it is important to note that *even* alone is not enough to license PPIs or NPIs, as shown in (4):

(4) a. I heard even the faintest noise.
b. I didn't hear even the faintest noise.

In (4), the sentences are all acceptable, though the focus element *even* is used in the affirmative (4a) and in the negative (4b).

Now consider the following pair of sentences, which involves the lowest point of the pragmatic scale (2):

(5) a. John cannot solve the easiest problem.
b. John cannot solve a difficult problem.

If John cannot solve the easiest problem, then he may not in general be able to solve a more difficult one. Note that the examples in (5) are negative sentences. Let's see what happens if we change the sentences into affirmative ones with a focus marker *even*:

(6) a. *John can solve *even* the easiest problem.
b. John can solve the easiest problem.

Why is it that the focus element *even* renders the acceptable (6b) unacceptable, as shown in (6a)? Assuming that expressions like *even the easiest problem* are on the bottom of the pragmatic scale (2), compare the grammatical (5a) with the ungrammatical (6a). A natural conclusion is that [*even* + an expression on the bottom of the scale] requires negation in order to be properly licensed. In sum, an expression on the bottom of the pragmatic scale, together with the focus element *even*, requires negation, thereby being an NPI.

Given the pragmatic scale, the top of the scale is a potential PPI, while the bottom of the scale is shown to be a potential NPI. This is illustrated in the following polarity scale:

(7) the most (=positive polarity)

the least (=negative polarity)

The topmost endpoint of the scale represents a PPI and the lowest endpoint of the scale represents an NPI. The term 'most' and 'least' may flip-flop according to a given context.

2.2. Polarity item licensing in Korean

Superlatives in Korean behave the same way as their English counterparts do. For example, consider the following:

(8) a. John-un [kacang elyewun mwuncey]-to phwul **swu iss-ta.**[2]
John-Top most difficult problem-also solve can-Dec
'John can solve even the most difficult problem.'

b. John-un [shiwun mwuncey]-lul phwul **swu iss-ta.**
John-Top easy problem-Acc solve can-Dec
'John can solve an easy problem.'

If John can solve *kacang elyewun mwuncey* 'the most difficult problem,' then he may also be able to solve *shiwun mwuncey* 'an easy problem.' Note that the relation between (8a) and (8b) is exactly the same as the one we have seen in the English example (1) earlier. Let us put off the discussion about the roles of the particle *-to* and accusative case marker *-lul*, both of which we believe are very crucial for our purpose.

With this in mind, consider what happens if we negate these sentences.

(9) a. *John-un [kacang elyewun mwuncey]-to phwul **swu eps-ta.**
John-Top most difficult problem-also solve can not-Dec
'John can not solve even the most difficult problem.'
b. John-un [shiwun mwuncey]-lul phwul **swu eps-ta.**
John-Top easy problem-Acc solve can not-Dec
'John can not solve an easy problem.'

The negated sentence (9a) is unacceptable, in contrast to the grammatical (9b). The same explanation as the one provided for English applies here. That is, the superlative *kacang elyewun mwuncey* 'the most difficult problem' is placed on top of the pragmatic scale and becomes a positive polarity item, which can only be licensed in an affirmative sentence.

Now, let us discuss the cases at the opposite end of the pragmatic scale:

(10) a. John-un [kacang swiwun mwuncey]-to phul **swu eps-ta.**
John-Top most easy problem-also solve can not-Dec
'John cannot solve even the easiest problem.'
b. John-un [elyewun mwuncey]-lul phul **swu eps-ta.**
John-Top difficult problem-Acc solve can not-Dec
'John cannot solve a difficult problem.'

If John cannot solve *kacang swiwun mwuncey* 'the easiest problem,' then he may probably not be able to solve a more difficult one. Compare these sentences with their affirmative counterparts in (11) below:

(11) a. *John-un [kacang swiwun mwuncey]-to phul **swu iss-ta.**
John-Top most easy problem-also solve can-Dec
'John can solve even the easiest problem.'
b. John-un [elyewun mwuncey]-lul phul **swu iss-ta.**
John-Top difficult problem-Acc solve can-Dec
'John can solve a difficult problem.'

Interestingly enough, the affirmative sentence (11a) is unacceptable. The reason is that, once again, the superlative *kacang swiwun mwuncey* is placed on the bottom of the pragmatic scale and that [an expression on the bottom of the pragmatic scale + *-to*] constitutes an NPI. (11b), however, is not such a case, because the expression *elyewun mwuncey* is not placed on the bottom of the scale. In sum, we have shown that some expressions including superlatives are placed at either extreme of the pragmatically defined scale and that an expression at the top of the scale constitutes a PPI, in conjunction with *-to*, while the one on the bottom constitutes an NPI, in conjunction with *-to*.

3. Polarity Item as an Indefinite + [*-to*]

Before analyzing the internal structure of the universal quantifiers in Korean, let us clarify the meaning of *amwu* 'any' in Korean. Essentially, *amwu* is an indefinite and seems to be used to denote something or someone whose identity is vague or is deliberately unidentified. Suppose that there are people that we would like to see and that one specific person of the group is important for us. In this case, we do not refer to that particular person as *amwu*. Rather we would call him/her by name or by an appropriate title. There seems to be a general tendency that the more significant a thing/person is, the more specific the referring expression that is used. Of course, there may be a situation in which we employ an indefinite/non-specific expression on purpose in order to show particular emotions or for some other reasons. We ignore such a special case. If the indefinite *amwu* denotes (pragmatically) less important, then it may be placed on the bottom of the pragmatic scale of the pattern in (7). This is enough to explain the negative polarity nature of *amwu-to* as well as the universal quantifier nature of *amwu-na*.

Now let us get to the issue of why the particle *-to* renders an expression at either extreme of the pragmatic scale a polarity sensitive item. Recently Lee (1996) proposed a unified account of polarity phenomena, using the notions of concession via inclusion (which we refer to as a conjunctive conjoiner) and a pragmatic scale. While Lee treats *-to* as a concession marker[3], we take it to be a simple conjunctive conjoiner, which entails by its nature the existence of other potential member(s). Consider the following examples:

(12) a. John-to Mary-to o-ass-ta.
John-also Mary-also come-Pst-Dec
'Not only John but also Mary came.'

b. John-to Mary-to oci ahn-ass-ta.
John-also Mary-also come not-Pst-Dec
'Neither John nor Mary came.'

According to Shi (1997), the particle *-to* in (12a) renders *John* and *Mary* included in the set of people who came. Likewise, in (12b), *John* and *Mary* are included in the set of people who did not come, since the particle *-to* simply includes its complement in a set denoted by the predicate. Hence (12a,b) may be simplified as follows:

(13) a. come (John + Mary)
b. ¬ come (John + Mary)

However, Shi (1997) does not explain why the composition [*amwu* + *-to*] should invariably become an NPI in his analysis.

An essential meaning of the particle *-to* is inclusion, as Lee (1996) and Shi (1997) note.[4] In this regard, Lee and Horn's (1995) claim that *any* is an indefinite plus *even* is too strong. The meaning of the Korean conjoiner *–to* is simply 'also' or 'too' but not 'even.' How then should we treat the combined form *amwu-to* (NPI *any*)? Let us start with a simple case given by the pattern in (14):

(14) #John-to o-ass-ta.
John-also come-Pst-Dec
'John also came.'

The sentence (14) is unacceptable in a situation where there is no other person who came other than John. On the other hand, if there were at least one more person who came, then (14) would be acceptable. Therefore where (14) is acceptable, it entails that someone other than John, e.g. Bill, be a member of the set of people who came. In short, [x-*to*] entails that there should exist at least one more member denoted by the predicate.

With this in mind, let us return to the relevant examples, repeated as (15):

(15) a. *John-un [kacang swiwun mwuncey]-to phul **swu iss-ta.**
John-Top most easy problem-also solve can-Dec
'John can solve even the easiest problem.'
b. John-un [elyewun mwuncey]-lul phul **swu iss-ta.**
John-Top difficult problem-Acc solve can-Dec
'John can solve a difficult problem.'

Since the conjunctive conjoiner *-to* conjoins an additional member to a set denoted by the predicate, there should exist at least one more member. Suppose that someone, e.g. John, can solve the easiest problem of a given set of problems. That does not automatically entail that he may also be able to solve a more difficult one. He may or may not. What is important is that there does remain a possibility that he cannot solve any other problem except the easiest one. In this case, the conjunctive conjoiner *-to* cannot be used. From this follows the

unacceptability of (15a).

To be more concrete, suppose that there are four problems with differing degrees of difficulty in such a way that A is the easiest problem and B, more difficult, C, even more, and finally D is the most difficult. To say that someone can "also" (i.e. *-to* in Korean) solve problem A entails that there should be at least one more problem, e.g. B, C, or D, that he can solve. However, being able to solve problem A does not always guarantee an ability to solve a more difficult one, namely B, C, or D. Therefore, the use of *–to* 'also' is not appropriate in this situation.

Alternatively, suppose that John cannot solve the easiest problem A. In this situation, the use of the conjunctive conjoiner *–to* implies that there must be at least one more problem that he cannot solve, namely problem B, C, or D, in addition to A. Therefore, (16), which is the negation of (15a), is fully acceptable in contrast to the unacceptable (15a).

(16) John-un [kacang swiwun mwuncey]-to phul **swu eps-ta.**
John-Top most easy problem-also solve can not-Dec
'John cannot solve even the easiest problem.'

Likewise, to say that someone can "also" solve problem D entails that there should exist at least one more problem that s/he can solve, e.g. A, B, or C. This is quite probable because one can usually solve an easier problem if s/he can solve a harder one. Put another way, problem D, combined with *-to*, becomes a PPI. Therefore, the following example is fully acceptable:

(17) John-un [kacang elyewun mwuncey]-to phwul **swu iss-ta.**
John-Top most difficult problem-also solve can-Dec
'John can solve even the most difficult problem.'

Now we are ready to discuss the claim that an indefinite + [*-to*] becomes a polarity item. Recall that *amwu* 'any' is assumed to be the least significant: in the sense that if someone is likely to come (by default), then we don't even take into consideration the possibility of his not coming. It would not be appropriate to say that *amwu* (=the most likely to come) "also" came, because there still remains a possibility that no one else came. Again, *-to* is possible only if there is at least one more member denoted by the predicate. Therefore, the affirmative (18) is not acceptable.

(18) *amwu-to o-ass-ta.
any-also come-Pst-Dec
'(lit.) Anyone also came.'

On the other hand, it is quite appropriate to say that *amwu* (=the most likely to

come) "also" did not come, because there may surely be at least one more person who didn't come, e.g. A, B, or C. Hence (19), which is the negation of the unacceptable (18), is fully acceptable:

(19) amwu-to ahn o-ass-ta.
any-also not come-Pst-Dec
'(lit.) Anyone also did not come.'

It is important to note that the complement of the conjoiner *–to* should be indefinite to be interpreted as a negative polarity item. For example, a definite complement of *–to* is not an NPI, as discussed in Chung (1993). Consider the following:

(20) a. ku-nun macimak nam-un han salam-to an manna-ss-ta
he-Top last remain-Rel one person-also not meet-Pst-Dec
'He did not meet the person who remained last.'
b. ku-nun macimak nam-un han salam-to manna-ss-ta
he-Top last remain-Rel one person-also meet-Pst-Dec
'He met the person who remained last.'

In (20), the quantified expression *han salam-to* 'one person also' is modified by a relative clause and thus is a definite noun. (20a) is a negative sentence and (20b) is an affirmative one, but both of these allow the quantified expression *han salam-to*, suggesting that it is not a polarity sensitive item. Compare the sentences with the following:

(21) a. ku-nun han salam-to an manna-ss-ta
he-Top one person-also not meet-Pst-Dec
'He did not meet even one person.'
b. *ku-nun han salam-to manna-ss-ta
he-Top one person-also meet-Pst-Dec
'He met even one person.'

As shown in (21), indefinite expressions like *han salam-to* are NPIs in Korean. A question then arises with regard to the pragmatic scale: Why don't we have PPIs with quantifiers? NPIs are the lowest point of the scale, represented by the smallest natural number, namely one. However, since the biggest natural number cannot be represented on the scale, we have no quantified PPIs, as Choi (1998) notes. In short, the indefinite expression *amwu* is on the bottom of the pragmatic scale, thereby becoming an NPI, if accompanied by *-to*.

Since we concluded that a polarity item is an indefinite + [*-to*], it is predicted that there must be other polarity items consisting of an indefinite + [*-to*]. This prediction is indeed borne out in the following examples:

(22) a. hakkyo-ey-nun etten salam-to eps-ta.
School-at-top a certain person-to is not
'There is not anybody in the school.'
b. hakkyo-ey-nun nwukwu-to eps-ta.
School-at-top who-to is not
'There is not anybody in the school.'

In (22a), *etten salam-to* is literally 'a certain person-also.' In other words, it consists of an indefinite person + [*-to*]. If it is interpreted as a definite expression, which is also possible in Korean, the whole expression *etten salam-to* would not be interpreted as an NPI. In this case, (22) can be paraphrased as something like 'There is not a certain person, either, whose identity I know, but I don't want to specify who it is.' Likewise, the NPI *nwukwu-to* in (22b) consists of an indefinite + [-to]. If it is interpreted as a definite expression, then it would not be interpreted as an NPI, either. In this case, what (22b) means would be something like 'I know such and such a person is not in the school. In addition, I know that someone whose identity I don't want to reveal is not in the school either.'

4. Universal Quantifier as an Indefinite + [*–na*]

In this section, we are concerned with the internal structure of the Korean universal quantifiers of the pattern of *amwu-na* 'anyone,' which is also called free choice 'any.'

In contrast to *-to*, the disjunctive conjoiner *-na* 'or' does not necessarily render its complement "included" into a set of entities/properties denoted by the predicate. Consider, for example, the following:

(23) Mary-na John-i kal kes-i-ta.
Mary-or John-Nom will go thing-is-Dec
'Mary or John will go.'

In order for (23) to be acceptable, there should exist at least one member of the set of people who will go, namely *Mary* or *John*. Notice that the disjunctive conjoiner *-na* can be used only if there should exist at least two members so that at least one of them (or both of them) could be the member denoted by the predicate. This is the very meaning of disjoint.

With this background in mind, consider the following examples:

(24) a. coffee-lul masi-ca.
coffee-Acc drink-Prp
'Let's drink coffee.'

b. coffee-na masi-ca.
coffee-or drink-Prp
'Let's drink coffee.'

By sentence (24a), the speaker literally proposes to drink coffee, insinuating nothing else. However, it is not the case that the speaker simply proposes to drink coffee in (24b). Using the disjunctive *-na* 'or,' the speaker implies that there would be other things to do or something else to drink. Remember the role of the disjunctive *-na*, which signals existence of another choice to make. In addition, (24b) implies that drinking coffee is the most ready thing for the speaker to do. For example, the speaker could choose, e.g. to drink tea, eat a meal, or go to a concert. Among the things he could choose, drinking coffee is the easiest thing for the speaker to do. Only in this situation is (24b) acceptable. In short, [x-*na*] entails that there is at least one more potential member that could otherwise be chosen by the denotation of the predicate.[5]

Now let us discuss the semantics of *amwu-na*, which is composed of an indefinite + disjunctive conjoiner [*-na*]. In the previous sections, we suggested that *amwu* refers to something/someone least significant and hence is placed on the bottom of the pragmatic scale. Consider the following:

(25) (Looking at a menu table)
A: mwuel mek-ci?
what eat-Q?
'What shall we eat?'
B: amwu ke-na mek-ca.
any thing-or eat-Prp
'Let's eat anything.'

What (25B) entails is that there is in fact at least one more choice, e.g. chicken soup, chowder soup, mashed potato, or what not, which could be chosen. The fact that B could choose the least significant or the most ready thing to eat, represented by *amwu*, suggests that B might otherwise choose a better thing to eat. Therefore, the speaker B could choose any of the items on the menu. Hence comes the name "free choice *any*."

If it is true that an indefinite noun (that may be placed on the bottom of the pragmatic scale) + disjunctive conjoiner [*-na*] yields a universal quantifier, then it is predicted that any other indefinite noun + [*-na*] would also yield a universal quantifier. This prediction is indeed borne out by the following examples:

(26) a. etten salam-ina kukes-ul hal swu iss-ta.
a certain person-na it-acc do can-Dec
'Anyone can do it.'

b. nwukwu-na kukes-ul hal swu iss-ta.
who-na it-acc do can-Dec
'Anyone can do it.'

In (26a-b), both *etten salam-ina* and *nwukwu-na* can be paraphrased as a universal quantifier 'anyone' in English.

5. Conclusion

In this paper, we tried to answer the following three questions: (i) What are the ingredients of UQs in Korean? (ii) What are the ingredients of the polarity items? Finally (iii) what is the relationship between these two seemingly unrelated groups?

We analyzed the UQ *amwu-na* 'anyone' and the NPI *amwu-to* 'anyone.' We first decomposed *amwu-to* into [*amwu* + *-to*], of which [*amwu*] is an indefinite and [*-to*] is a conjunctive conjoiner. We then decomposed the UQ *amwu-na* into [*amwu* + *-na*], of which [*-na*] is a disjunctive conjoiner. Given that both [*-to*] and [*-na*] are conjoiners, it follows that *amwu-to* and *amwu-na* presuppose the existence of another member of the set of entities and/or properties denoted by the predicates that is to be conjoined by these morphemes. Assuming that *amwu* is placed on the bottom of the pragmatic scale, we showed that *amwu-to* and *amwu-na* become a polarity item and a UQ, respectively.

Based on these observations, we argued in sections 3 and 4 that an indefinite noun + [*-to*], such as *etten salam-to* and *nwukwu-to*, becomes a polarity item and that an indefinite noun + [*-na*], such as *etten salam-ina* and *nwukwu-na*, becomes a universal quantifier.

Notes

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1. A scale approach to the polarity phenomena is found in various previous works including Israel (1996), Fillmore, Kay and O'Connor (1988), Kadmon and Landman (1993), Lee and Horn (1995), and references cited therein, among many others. Readers are referred to these works.

2. This paper adopts Yale Romanization for transcribing Korean. The following abbreviations are used: Top=Topic, Acc=Accusative Case Marker, Dec=Declarative Sentence, Pst=Past Tense, Prp=Propositive, Cl=Classifier

3. Similarly Lee and Horn (1995) take *any* to be an indefinite plus *even*.

4. Rullman (1996) discusses similar facts in Dutch, adopting the scalar theory.

5. Note that the x in [x-na] is a variable, which can be filled with any indefinite to yield a universal

quantifier. Thus, *nwukwu-na* (literally who-or, meaning 'anyone') and *etten salami-na* (literally a certain person-or, meaning 'anyone') are all interpreted as a universal quantifier. See Jang and Kim (1997) for a detailed discussion.

References

Choi, Kiyong. 1998. "On a Negative Polarity Item *amwu* in Korean," *Studies in Generative Grammar* 8.2: 313-342.

Chung, Daeho. 1993. "Negative Polarity Items in Korean: Formal and Distributional Types," Ms. University of Southern California.

Fauconnier, Gilles. 1975. " Pragmatics Scales and Logical Structure," *Linguistic Inquiry* 6: 353-375.

Fillmore, C., P. Kay, and C. O'Connor. 1988. "Regularity and Idiomaticity in Grammatical Constructions: The Case of *let alone*," *Language* 64: 501-538.

Israel, Machael. 1996. "Polarity Sensitivity as Lexical Semantics," *Linguistics and Philosophy* 19: 619-666.

Jang, Youngjun. 1998. "Don't You Need One More to Conjoin?," *Journal of Korean Linguistics* 23: 3.535-561.

Jang, Youngjun. 1999. "A Scalar Approach to ANY in English and Korean," *Proceedings of the 2nd GLOW in Asia*: 177-194. Nanzan University, Japan.

Jang, Youngjun and Il-Kon Kim. 1997. "Disjunctive *-na* and Universal Quantifier Reading in Korean," *SICOL-97*: 478-485.

Kadmon, Nirit and Fred Landman. 1993. "ANY," *Linguistics and Philosophy* 16: 353-422

Ladusaw, William. 1980. "The Notion of Affectiveness and the Negative Polarity Licensing," *Journal of Language Research* 1: 1-15.

Lee, Chungmin. 1996. "Negative Polarity Items in English and Korean," *Language Sciences* 18: 1-2.505-523.

Lee, Young-Suk and Laurence Horn. 1995. "*Any* as Indefinite plus *Even*," Ms. Yale University, New Haven.

Rullman, Hotze. 1996. "Two Types of Negative Polarity Items," *NELS* 26: 335-350.

Shi, Chung-Kon. 1997. "The Licensing Condition of Negative Polarity Item in Korean," *Korean Journal of Linguistics* 22: 3.71-497.

Mixed Categories and Multiple Inheritance Hierarchy in Korean Verbal Gerundive Phrases [1]

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1 Introduction

One of the main puzzles in Korean verbal gerundive phrases (VGP) is that they display a mix of nominal and verbal properties. This has provided a challenge to syntactic analyses with a strict version of X-bar theory. Various approaches (cf. Lapointe 1993, Yoon 1996, Kaiser 1998) have been proposed to solve this puzzle, but they all have ended up abandoning or modifying fundamental theoretical conditions such as endocentricity, lexicalism, and null licensing (cf. Pullum 1991). This paper attempts to provide a new constraint-based HPSG approach that allows to maintain these conceptually natural considerations.

Like English VGPs, Korean VGPs also exhibit verbal properties internally and nominal properties externally. Internal verbal properties are prevalent. One telling piece of evidence comes from the inheritance of arguments from the lexeme verb from which the gerundive verb is derived. As shown in (1), the gerundive verb takes the same arguments, the nominative subject and accusative object:

(1) [John-i ecey ku chayk-ul/*uy
John-NOM yesterday that book-ACC/*GEN
ilk-ess-um]-i myonghwak-hata
read-PAST-NMLZ-NOM clear-do
'John's having read the book yesterday is clear'

Various other phenomena also show that VGPs are internally similar to VPs. The VGP can include a sentential adverb as in (2)a; an adverbial element can modify the gerundive verb as in (2)b; the phrase can include the sentential negation marker *an* as in (2)c; it also can contain the full range

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of auxiliaries as in (2)d, the phrase allows free scrambling of its elements as in (2)e:

(2) a. John-i **papokathi** ku chayk-ul ilk-ess-um (Sent. Adv)
John-NOM foolish that book-ACC read-PAST-Nmlz
'John's having read the book foolish'

b. John-i chayk-ul **ppalli/*ppalun** ilk-um (Adv Mod)
John-NOM book-ACC fast(adv)/*fast(adj) read-Nmlz
'John's reading books fast.'

c. John-i chayk-ul **an** ilk-um (Sentential Neg)
John-NOM book-ACC NEG read-Nmlz
'John's not reading books.'

d. John-i chayk-ul ilk-ko **siph-um** (Aux verb)
John-NOM book-ACC read-COMP want-Nmlz
'John's wanting to read books'

e. **chayk-ul** John-i __ ilk-um (Scrambling)
book-ACC John-NOM __ read-NM

Whereas the internal syntax of the VGPs is much like that of VPs, its external structure is more like that of NPs. VGPs can appear in the canonical NP positions such as subject or object as in (3)a or as a postpositional object in (3)b (cf. Yoon 1996, Kaiser 1998)

(3) a. [ai-ka chayk-ul ilk-um]-i nollapta
child-NOM book-ACC read-NMLZ-NOM surprising
'That child's reading a book is surprising'

b. [John-i enehak-ul kongpwuha-m]-**eytayhay** mollassta
John-NOM linguistics-ACC study-Nmlz-about not.know
'(We) didn't know about John's studying linguistics.'

One thing worth pointing out here is that the VGP does not have the full distribution of NPs. As demonstrated in (4), the VGP cannot serve as the head of a relative clause, implying that the external syntax of the VGP is somewhat different from that of a canonical NP.

(4) *John-un [[salam-tul-i __ molulila-ko sayngkakha-n]
John-TOP people-PL not.know-COMP think-REL

[Mary-ka ilccik ttenass-um]]-ul alassta.
Mary-NOM early left-NMLZ knew
'*John knew [Mary's leaving early] that he thought that people wouldn't notice'.

Extraction is another instance indicating that the VGP behaves more like Ss and less like NPs in terms of the external syntax. Unlike a canonical nominal construction in (6), an element of the phrase can be extracted out as in (5).

(5) **ku chayk-ul** na-nun [John-i __ ilkess-um]-ul mitnunnta
that book-ACC I-TOP John-NOM __ read-NMLZ-ACC believe
'That book, I believe John read.'

(6) ***Ku hwoesa-uy** Tom-un [__ sacang-ul] manassta
the company-GEN Tom-TOP __ president-ACC met
'*The company, Tom met president of.'

The Korean VGP has its own language particular properties too. The language has two types of clausal nominalizer, *-um* and *-ki*, each of which behaves differently in several respects. For example, unlike the nominalizer *-um*, the host of *-ki* cannot usually be a tensed stem as shown in (7).[2]

(7) John-i cip-ul ttena-(*ass)-ki-lul yaksokhayessta
John-NOM house-ACC leave-PST-NMLZ-ACC promised
'John promised his leaving home.'

There also exist semantic distinctions between the two types of nominalizers. For example, the gerundive verb with the *-um* nominalizer requires the higher verb to be a factive predicate such as *hwuhoyha-ta* 'regret', *myongpaykha-ta* 'evident', *pwunmyongha-ta* 'clear' etc, whereas the one with the nominalizer *-ki* combines with a nonfactive predicate such as *kitayha-ta* 'expect', *kecelha-ta* 'reject', *myonglyongha-ta* 'order', *yaksokha-ta* 'promise', and so forth, as illustrated in the following contrast:

(8) a. [John-i cip-ul ttena-ss-um/*ki]-i myongpaykhata
John-NOM house-ACC leave-PST-NMLZ-NOM evident
'It is evident that John left home.'

b. Na-nun [John-i tolao-ki/*um]-lul kitayhanta
I-TOP John-NOM come.back-NMLZ-ACC expect
'I expect John to come back.'

2 Morphosyntactic Properties of the Nominalizers

In analyzing such complicated and mixed properties of Korean nominalizations, the first thing we need to look into is the properties of the nominalizers. There have been two main analyses of the nominalizers: as clitics (Kaiser 1998) and as phrasal affixes (Yoon 1989, 1996).[3] The structure in (9) is a canonical structure that a syntactic analysis (e.g., Yoon 1996) generates.[4]

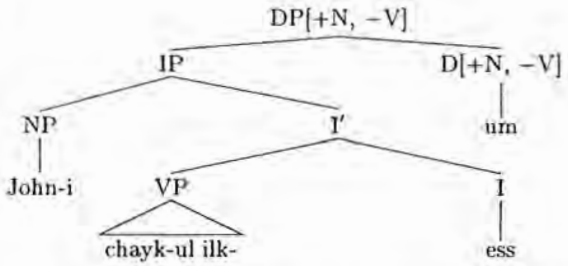
[2]Another language particular property is that the nominalizer *um* preceded by a tense marker can be used as a kind of mood marker as in (i).

(i) John-i ttena-ss-um.
John-NOM leave-PST-NMLZ
'John left.'

[3]Strictly speaking, Kaiser's (1998) analysis claims that the nominalizer clitic is attached not to a sentence but to a verb lexeme in syntax.

[4]Yoon (1996) adopts the following Phrasal Conversion Rule:

(9)



The approach in which the nominalizers are attached to phrases in syntax, is motivated by syntactic factors such as the phrasal distribution of these morphemes, their productivity, and their scope (see section 4). For example, if one assumes that these morphemes are attached to syntactically-formed phrases rather than to roots or words, their phrasal or sentential 'scope' falls out naturally.

However, such syntactic and semantic behaviour does not necessarily lead us to the conclusion that the nominalizers are post-syntactic elements or clitics, in particular when considering their robust inflectional and lexical properties. The nominalizers are phonologically dependent and cannot occur in isolation. Neither can the verb stem occur alone.

Some of the basic properties of clitics (Zwicky and Pullum 1983) show that the nominalizers are not clitics. For example, the degree of selection between the clitics and the words preceding them is low. But the Korean nominalizers can attach only to untensed or tensed verb stems. They cannot be attached to any other syntactic category.

Another attested creterion of Zwicky and Pullum (1983) is that syntactic rules can affect affixed words but cannot affect clitic groups. But what we can observe in gerundive phrases is that the nominalized verb can undergo a gapping process as in (10). This entails that the verb stem forms a strong morphological unit with the attached nominalizer.

(10) [John-i sakwa-lul __] kuliko [Mary-ka panana-lul
John-NOM apple-ACC and Mary-NOM banana-ACC
mekess-um]
eat-PST-NMLZ
'John ate an apple and Mary a banana'

Another difficulty in treating nominalizers as clitics or an independent non-head element comes from the fact that, as noted in (8), the meaning of the higher verb decides the type of the nominalizers. In particular, the attachment of a delimiter such as *man* 'only' after the nominalizer as in (11) implies that the morphological form value of the nominalizer *-um/ki* should be visible to the higher verb.

(i) *um/ki*: CAT: D (or N)
SUBCAT: $[V^n \_\_]^n$ where n is 0 or 2.

(11) wuli-nun John-i nolayha-ki(/*um)-man-ul kitayhayessta
we-TOP John-NOM sing-NMLZ-DEL-ACC expected
'We expected John's singing only.

If the nominalizer were a clitic, an additional mechanism should be introduced to make the form value of this nominalizer available to the higher verb. No clitic elements, to our knowledge, serve as the morphological or syntactic head of the phrase they attach to.

There is also no strong morphological evidence that the nominalizers are phrasal affixes. Lexical integrity tests, which show us the internal structure of words is opaque to various syntactic processes (Bresnan and Mchombo 1995 and Kim 2000), prove the solid inflectional properties of these nominalizers.[5]

Extraction: According to the extraction test, no part of a word can be extracted. As in (12), the nominalized full word *hakca-taw-um* 'scholaritic' can be relativized but not part of its word *hakca* 'scholar'.

(12) a. ku-ka __ wenha-n hakca-tawu-m
he-NOM want-REL scholar-Semi.Cop-NMLZ
'the scholar-likeness that he wanted'

b. *ku-ka __ -tawu-m-ul wenhayess-ten hakca
he-NOM __ -Semi.Cop-NMLZ-ACC wanted-REL scholar

Gapping: A verb can be gapped under identity with a verb in the previous sentence, but part of a verb cannot be gapped. As in (13), the verb must be gapped together with the nominalizer.

(13) *[John-i sakwa-lul __ -um] kuliko [Mary-ka panana-ul
John-NOM apple-ACC and Mary-NOM banana-ACC
mekess-um]
eat-PAST-NMLZ
'John ate an apple and Mary a bananna'

Coordination: No part of a verb can be factored out. No morphological constituents such as a nominalizer can function as a true conjunct.[6]

(14) a. [Tom-i nolay-lul ha-yess-um] kuliko
Tom-NOM sing-ACC do-PAST-NMLZ and
[John-i cwum-ul cwu-ess-um]
John-NOM dance-ACC dance-NMLZ
'Tom singing a song and John dancing'

b. *[Tom-i nolay-lul hay-ess-__] kuliko [John-i cwum-ul cwu-ess-um]

[5]The test for anaphoric islands appears to be irrelevant since the host is a verb stem.

[6]As in *[My mother and my father]'s house*, the clitic *'s* can be attached to a coordinated phrase.

If the nominalizer were simply taken to be an independent syntactic element that can be attached to a phrase like IP as in the syntactic analysis tree (9), (14)b would be an IP coordination.

The phenomena we have observed so far illustrate the strong inflectional properties of the nominalizers. Taking a syntactic or a clitic approach would require nontrivial modifications to capture these properties.

3 Analysis

Given the morphological status of the nominalizers *-um* and *-ki*, the next question is what is the categorical status of the resulting morphological process. The attachment of a nominative or accusative marker to the gerundive verb may support its morphologically nominal status. However, a case marker can be attached to a verbal element too, as in (15).[7]

(15) [John-i cip-ey ka-ss-nunka]-lul cosahaypoca
John-NOM home-LOC go-PST-Q-ACC investigate-SUG
'Let's find out whether John went home or not.'

There also exists negative evidence that cast doubts on the assumption that the VGP has the external syntax of canonical NP. As noted before, the VGP cannot be modified by a relative clause (see (4)) and no element can be extracted out of the phrase (see (5)). In addition, the phrase can neither serve as the host of a genitive case nor attract a plural marking as shown in (16).[8]

(16) a. *[John-i chayk-ul ilk-um]-uy cinsil
John-NOM book-ACC read-NMLZ-GEN truth

b. *[John-i chayk-ul ilk-um]-tul-i
John-NOM book-ACC read-NMLZ-PL-NOM

Such data suggest that though the gerundive verb may have some nominal properties, it is not a canonical noun.

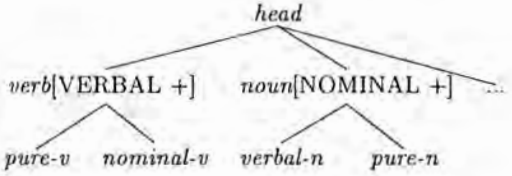
Interpreting the idea of the category decomposition by the binary feature of N and V in a different way, I propose that there are two types of verbs: pure verbs and verbs with nominal properties. In the same spirit, nouns have two subtypes: verbal nouns and pure nouns, as represented in the hierarchy (17).

[7]Copula constructions may support the nominal status of the gerundive verb. However, we also can observe that the host of the copula verb need not be a noun:

(i) i kes-un [haksayng-eykey]-man-i-ta
this thing-TOP student-DAT-DEL-COP-DECL
'This is only to the students.'

[8]One could attribute this to the fact that the plural affix *tul* prefers a [ANIMATE +] host. But there are cases where it combines with a nonanimate noun as in *cinsil-tul* 'truth-PL'. See Kaiser 1998

(17)



The classification in the hierarchy (17) assigns canonical verbs to the type of *pure-verb* and nominalzed gerundive verbs to the type of *nominal-v*. Under this system canonical nouns belong to type of *pure-noun* whereas the so-called verbal nouns, combining with the light verb *ha-ta* 'do', are type of *verbal-n*. All *verb* have a [VERBAL +] feature value whereas *noun* has a [NOMINAL +] value as default. Given this system, the subtypes of *verb* and *noun* will allow the following minimal feature specifications.

(18) a.
$$\begin{bmatrix} \textit{nominal-v} \\ \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{VERBAL} + \\ \text{NOMINAL} + \\ \text{VFORM um/ki} \end{bmatrix} \end{bmatrix}$$

b.
$$\begin{bmatrix} \textit{pure-v} \\ \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{VERBAL} + \\ \text{NOMINAL} - \end{bmatrix} \end{bmatrix}$$

c.
$$\begin{bmatrix} \textit{verbal-n} \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{NOMINAL} + \\ \text{VERBAL} + \end{bmatrix} \end{bmatrix}$$

d.
$$\begin{bmatrix} \textit{pure-n} \\ \text{HEAD} \begin{bmatrix} \textit{noun} \\ \text{NOMINAL} + \\ \text{VERBAL} - \end{bmatrix} \end{bmatrix}$$

The desirable generalizations we can capture from such a system is that all elements with the feature value [VERBAL +] will have a nonempty verbal argument structure and all elements with the feature value [NOMINAL +] can serve as the grammatical subject or object of a predicate or the object of a postposition.[9]

This category classification can easily account for the mixed nominal and verbal properties of VGP constructions, too. The categorial properties of gerundive verbs are determined by their lexically specified head value. The present analysis defines the predicate with the nominalizer *-um/ki* in VGPs are all objects of *nominal-v*. Under the mechanism of inheritance, a type will inherit all the constraints from its supertypes. This implies that the type *nominal-v* bears all the properties of its supertype *verb*. For example, the proposed system allows the lexeme *ilk-ta* 'read' to be realized either as *pure-v* as in (19)a or as the nominalized verb *ilk-um* 'read-NMLZ' as in (19)b (either through a lexical rule or a constructional constraint):

[9]This means that verbal nouns will also have argument structure and case markers can be attached to nominal verbs too.

(19) a. ilk- 'read'

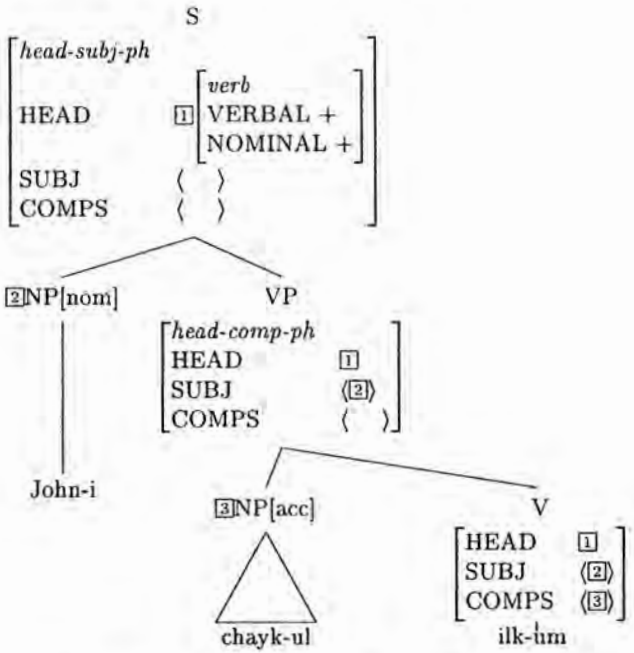
$$\begin{bmatrix} \textit{pure-v} \\ \text{FORM ilk-} \\ \text{SYN} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{VERBAL} + \\ \text{NOMINAL} - \end{bmatrix} \\ \text{SUBJ} \langle \boxed{2}\text{NP} \rangle \\ \text{COMPS} \langle \boxed{3}\text{NP} \rangle \end{bmatrix} \end{bmatrix}$$

b. ilk-um 'read-NMLZ'

$$\begin{bmatrix} \textit{nominal-v} \\ \text{MORPH} \begin{bmatrix} \text{ROOT ilk-} \\ \text{I-FORM ilk-um} \end{bmatrix} \\ \text{SYN} \begin{bmatrix} \text{HEAD} \begin{bmatrix} \textit{verb} \\ \text{VERBAL} + \\ \text{NOMINAL} + \\ \text{VFORM um} \end{bmatrix} \\ \text{SUBJ} \langle \boxed{2}\text{NP} \rangle \\ \text{COMPS} \langle \boxed{3}\text{NP} \rangle \end{bmatrix} \end{bmatrix}$$

This process of lexical realization reflects close relationships among *v-lexeme*, *pure-v*, *nominal-v*, projecting a structure like (20).

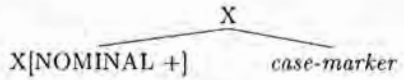
(20)



The gerundive (nominal) verb differs syntactically from the lexeme in two ways: its NOMINAL value is realized as positive and VFORM value is added. This gerundive inherits all the other properties such as argument structure value from the lexeme. This explains why the nominalized verb selects a nominative subject, can be modified by an adverb, allows sentential adverbials within the clause, and combines with the sentential negative marker, occurs with an auxiliary verb, and the like. Because the gerundive verb selects the same complement(s) as the verb lexeme it is derived from,

the phrase formed by the generundive and its complements will be a VP, forming a *head-comp-ph* (as can be noticed from the VP structure of (20)). And since the gerund selects a subject, it will be eligible to head a *head-subj-ph*, which combines a head VP with a nominative subject. This is what the top node S in (20) says, reflecting the internal properties of VGPs.

The external nominal properties of *nominal-v* come from its feature value [NOMINAL +]. I claim that case markers can combine with any elements bearing [NOMINAL +] as represented in the following structure (see (19)b):

(21)


Given the assumption that verbs with a nominalizer, a complementizer, or a question marker are all defined to have the feature [NOMINAL +], we can predict all these can be the complement of a case marker or a postposition as in (22).[10]

(22) a. John-i sakwa-lul **mek-ci-lul** moshayessta
John-NOM apple-ACC eat-COMP-ACC couldn't
'John couldn't eat apples.

b. wuli-nun [John-i kacang cekhaphan-ka]-**eytayhay**
We-TOP John-NOM most appropriate-Q-about
nonuyhayessta
discussed
'We discussed whether John is the most suitable.'

This explains the external nominal properties of the construction.

4 Further Consequences and Issues

Various morphological and syntactic phenomena further support the line of our assumption. Support for assuming VGP predicates with the *um/ki* nominalizer as a subtype of *verb* rather than as a subtype of *noun* comes from (a) the presence of a tense and an agreement suffix and (b) the possibility of heading an independent sentence as in (23), which is one of the main differences from English VGPs.

(23) sensayngnim-i chayk-ul **ilku-si-ess-um**.
teacher-NOM book-ACC read-HON-PAST-Nmlz
'the teacher's reading the book'

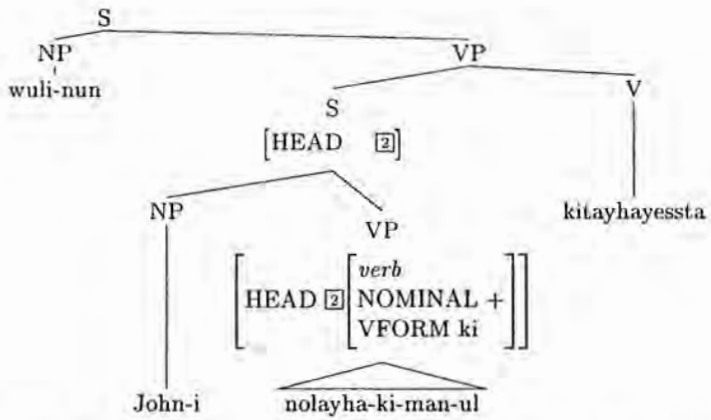
[10]This line of analysis also accounts for the fact that certain adverbials, which in the present analysis carry [NOMINAL +] value can cooccur with a case marker. See Wechsler and Lee 1996.

As observed, one interesting constraint in Korean VGPs is that the matrix predicate determines the type of nominalizer. As noted before, the restriction on the type of the VGP implies that the VFORM value of gerundive predicates should be available to the higher predicate. An issue arises for examples like (24) where a delimiter occurs after the nominalizer. Either a clitic or a phrasal approach requires an additional mechanism to make the morphological form value of the nominalizer pass up to the matrix predicate. But the present analysis provides a straightforward account.

(24) wuli-nun John-i nolayha-ki(/*um)-man-ul kitayhayessta
we-TOP John-NOM sing-NMLZ-DEL-ACC expected
'We expected John's singing only.

The *nominal-v* carries the form value of the nominalizer as its own VFORM value and this head feature projects up to the phrase, as presented in (25). This will eventually guarantee that the higher clause predicate can select a VGP whose predicate is in the correct nominalizer value.

(25)



The analysis further provides a clean way of capturing relativization and extraction phenomena. Though VGPs externally act like noun phrases, they do not allow a restrictive relative clause to modify them as repeated here in (26).

(26) *wuli-ka mall-in [John-i ku chayk-ul ilk-]-um
we-NOM dissuade John-NOM that book-ACC read-Nmlz
'*John's studying linguistics that we dissuaded'

In the present system, the only thing we need to adopt is the independent constraint that a relative clause modifies a nominal element. Then since a gerundive phrase is a projection of verb, we do not expect examples like (26). As noted before, it is possible to extract an element from VGPs, which is unexpected when considering the external status of the VGP to be a nominal phrase. But in our analysis, since the resulting VGP is a type

of *head-subj-ph* we predict it to behave just like sentences. This prediction is borne out from the similarities between a gerundive clause (27)a and a true sentential complement clause (27)b:

(27) a. **ku chayk-ul** na-nun [John-i yelsimhi __
that book-ACC I-TOP [John-NOM hard __
ilkess-um]-ul hwaksinhanta.
read-Nmlz]-ACC convinced
'As for the book, I am convinced that John thoroughly read it.'

b. **ku chayk-ul** na-nun [John-i yelsimhi __
that book-ACC I-TOP [John-NOM hard __
ilkessta]-ko tulessta.
read-PST-DECL]-COMP heard
'As for that book, I heard that John read it hard'

One phenomenon that appears to argue against the lexical integrity is coordination examples like (28), in which the nominalizers seem to coordinate two sentences.

(28) [[John-i sakwa-lul mek-ess]-ko
John-NOM apple-ACC eat-PST-CONJ
[Mary-ka maykcwu-lul masi-ess]-m]
Mary-NOM beer-ACC drink-PST-NMLZ
'John ate apples and Mary drank beer.'

In our analysis, this too is predictable. Since the second VGP is also a type of sentence, cases like (28) are coordination of two sentences. There is no category mismatch in my analysis: the second conjunct is different from the first one only in its VFORM value.[11]

The analysis also provides a simple way of dealing with cases in which the subject is realized as genitive as in (29).

(29) [John-uy chayk-ul ilk-um]-i nollapta
John-GEN that book-ACC read-NMLZ-NOM surprising
'John's reading books is surprising'

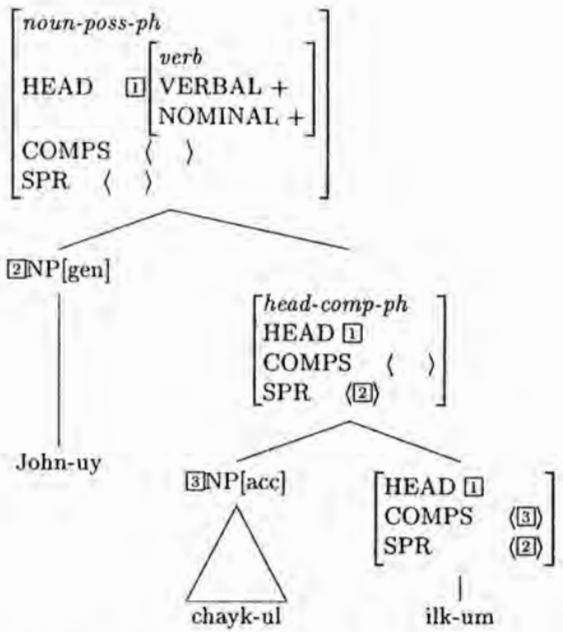
This example differs from the nominative subject VGP only in the way that the VP combines with a genitive specifier to form a *noun-poss-ph*. One simple solution is, adopting Malouf's (1998) analysis for English gerundive constructions, to allow the gerundive verb to select a specifier which is structure shared with the subject of the lexeme, as represented in the lexical entry (30).

[11] One additional constraint I assume is that in the coordination structure the head is the final conjunct. This will allow the VFORM value of the second conjunct to project up the higher S.

(30)
$$\begin{bmatrix} \textit{nominal-v} \\ \text{MORPH}\begin{bmatrix}\text{ROOT ilk-} \\ \text{I-FORM ilk-um}\end{bmatrix} \\ \text{SYN}\begin{bmatrix} \text{HEAD}\begin{bmatrix}\textit{verb} \\ \text{VERBAL} + \\ \text{NOMINAL} + \\ \text{VFORM um}\end{bmatrix} \\ \text{SPR } \langle \text{NP} \rangle \\ \text{COMPS } \langle \text{NP} \rangle \end{bmatrix} \end{bmatrix}$$

This lexical entry will assign the structure (31) to the sentence (29).

(31)



An independent constraint ensures that the combination of a head phrase with a specifier whose head is genitive is a type of *noun-poss(essive)-ph*. The head of this phrase is the gerundive verb *ilk-um*. It combines with its complement NP and forms a *head-comp-ph*, which then combines with a genitive specifier to form a *noun-poss-ph*.

This analysis allows us to predict similarities as well as contrasts between nominative subject VGPs and genitive subject VPGs. Since the head value of the resulting phrase in the latter is also *nominal-v*, we predict that it cannot serve as the head of a relative clause. This is what we

observe as in (32).[12]

(32) *John-un [[salam-tul-i __ molulila-ko sayngkakha-n]
John-TOP people-PL not.know-COMP think-REL

[Mary-uy ilccik ttena-m]]-ul alassta.
Mary-GEN early left-NMLZ knew
'*John knew [Mary's leaving early] that he thought that people wouldn't notice'.

Since the genitive VGP is a type of *noun-poss-ph*, we expect no extraction as in a canonical *noun-ph*. This is also borne out as in (33). Unlike a *head-sub-ph*, we cannot extract an element out of a *noun-poss-ph*.

(33) a. ***ku chayk-ul** na-nun [John-uy __ ilk-um]-i
that book-ACC I-TOP [John-GEN __ read-Nmlz]-NOM

nollapta
surprising
'(lit.) As for the book, John's reading is surprising.'

Another natural prediction would be the impossibility of coordinating the nominative subject VGP with a genitive type VGP. The impossibility of (34) stems from the coordination of a *head-subj-ph* and a *noun-poss-ph*:

(34) *[[John-i sakwa-lul mek-]-ko [Mary-uy maykcwu-lul
John-NOM apple-ACC eat-CONJ Mary-GEN beer-ACC

masi-]m]
drink-NMLZ
'(int)John eats apples and Mary's drinking beer'

As we have seen so far, once we take the gerundive verb to be a type of *nominal-v* which in one sense bears the verbal as well as nominal properties, we can provide a clean analysis of various related phenomena.[13]

5 Conclusion

This paper has shown that it is possible to analyze the Korean VGP in a way that maintains the lexical integrity principle (no syntactic rule affects word-internal structure), captures endocentricity (the generalization that every phrase has a head), and avoids empty categories.

[12]One advantage of our analysis is that it may predict speakers' variations for examples like (32). To those who accept such examples, a relative clause modification may depend on the type of constructions rather than on the head-value. That is, all nominal-constructions (including genitive VGPs) could be modified by a relative clause.

[13]The treatment of the VGP in this sense implies that the Korean VGP is similar to the English VGP with the accusative subject, but not with the genitive subject. See Malouf 1998 for the sentential properties of the accusative VGP and the nominal properties of the genitive VGP.

This has been achieved through the framework of HPSG. HPSG is a sign-based grammar in which the basic unit of linguistic object *sign* is a structured complexes of linguistic information, represented by *typed feature structure*. The grammar of a language is based on the interactions of declarative constraints on types of signs. In capturing linguistic generalizations in a precise and concise manner, linguistic types are arranged into a multiple-inheritance hierarchy. The mechanism of multiple inheritance hierarchy allows a succinct way of encoding generalizations about lexemes and phrases, while eliminating unnecessary stipulations. It further provides a clean, streamlined way of capturing the mixed properties of Korean VGPs that are in several respects different from English counterparts. This allows a simpler grammar for Korean.

References

Bresnan, Joan and Sam A. Mchombo. 1995. The Lexical Integrity Principle: Evidence from Bantu. *Natural Language and Linguistic Theory*, 13.2: 181–254.

Carpenter, Bob. 1992. Categorial Grammars, Lexical Rules, and the English Predicative. In R. Levine (ed.), *Formal Grammar: Theory and Implementation*. New York and Oxford: Oxford University Press.

Choi, Incheol. 1998. A Lexicalist Approach to Korean Sentential Nominalizations. Ms. University of Texas at Austin.

Kaiser, Lizanne. 1998. *The Morphosyntax of Clausal Nominalizations*. Doctoral Dissertation. Yale University.

Kim, Jong-Bok. 1998. Interface between Morphology and Syntax.. *Language and Information* 2:1, 177-213.

Kim, Jong-Bok. 2000. *The Grammar of Negation: A Constraint-Based Approach*. Stanford: CSLI Publications.

Kim, Young-Joo. 1985. Semantic conditions for the Occurrence of Sentential Nominalizers Um and Ki. *Harvard Studies in Korean Linguistics I*. 168-177. Seoul: Hanshin.

Lapointe, Steven. 1993. Dual Lexical Categories and the Syntax of Mixed Category Phrases. In A. Kathol & M. Bernstein (eds.), *Proceedings of ESCOL*, 199-210.

Lapointe, Steve and Sarah Nielsen. 1994. A Reconsideration of Type III Gerunds in Korean. In *Japanese and Korean Linguistics V*, 305–320. Stanford: CSLI Publications.

Malouf, Rob. 1998. *Mixed Categories in the Hierarchical Lexicon*. Doctoral Diss. Stanford University.

Pullum, Geoffery. 1991. English Nominal Gerund Phrases as Noun Phrases with Verb-Phrase Heads. *Linguistics* 29: 763–799.

Wechsler, Steve and Yae-Sheik Lee. 1996. The Domain of Direct Case Assignment. *Natural Language and Linguistic Theory* 14.3, 629-664.

Yoon, James. 1989. *A Restrictive Theory of Morphosyntactic Interaction and Its Consequences.* Ph.D. Dissertation. University of Illiniois, Urbana-Champaign.

Yoon, James. 1996. A syntactic account of category-changing phrasal morphology: nominalizations in English and Korean. In H.D. Ahn et al. (eds.), *Morphosyntax in Generative Grammar*, 63–86. Seoul: Hanshin.

Yoon, James. 1996. English Nominal Gerund Phrases as Phrasal Zero Derivations. *Linguistics 34: 339–356.*

Zwicky, Arnold M. and Geoffery K. Pullum. 1983. Cliticization vs. Inflection: English n't. *Language* 59: 502–513

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Affixation-Reduplication Interactions and Morphological Opacity in Tagalog

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1 Introduction

Natural languages frequently exhibit what is here called double morphemic exponence (DME). DME covers phenomena where a single morpheme receives two phonological exponents. In German, for example, the cooccurrence of suffixation and umlaut is productively observed (e.g., *Gast*≈*Gäste* 'guest(s)'). Although the simultaneous occurrence of the two phonological exponents may appear redundant, Tagalog morphology presents strong evidence that DME is authentic in languages since the cooccurrence of affixation and reduplication is indispensable to disambiguate various morphosyntactic functions.

In this paper, I address the question of how DME is formally motivated in general and how it is theoretically accounted for, paying close attention to relevant Tagalog data. First, I develop a generalized schema of DME within the framework of Optimality Theory (OT; Prince and Smolensky 1993) in section 2. I argue that sympathy theory (McCarthy 1999) plays a central role. In section 3, I analyze cases where affixation and reduplication disambiguate various morphosyntactic functions in Tagalog. In section 4, I provide a detailed account for reduplicant shapes. Tagalog has three varieties of reduplicant shapes, and the size of a reduplicant affects the determination of morphosyntactic categories. Finally, section 5 concludes the paper.

2 Morphological opacity and sympathy theory

DME is schematically characterized as /ABC+D_{α}/$_{\alpha}$→[ABC'+D_{α}]$_{\alpha}$ where the first three segments *ABC* belong to a stem and the remaining one *D* to an affix, α being an arbitrary morpheme expressing some morphosyntactic category, and the segment *D* is associated with α. *D* contributes to the expression of the morpheme α in the output, but the phonological change from /C/ to [C'] is another phonological expression of the same morpheme, provided that the phonological change is entirely morphologically conditioned. One such example can be drawn from German plurals where an affix *-e* or *-er* is often accompanied by umlaut (e.g., *Gast*≈*Gäste* 'guest(s)', *Buch*≈*Bücher* 'book(s)') (Zwicky 1967; Bach and King 1970; Robinson 1975; Strauss 1976; Lieber 1981, 1992; Janda 1982ab; Lodge 1989; Wiese 1996ab). Umlaut in German was historically phonological, but it is synchronically morphologized.

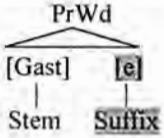
Suppose that UG contains a REALIZE MORPHEME constraint in (1). It dictates that some overt phonological expression must be associated with the newly introduced morpheme such that the output representation is different from the one without the morpheme (cf. Samek-Lodovici 1993; Gnanadesikan 1997;

Rose 1997; Walker 1998; Kurisu 2000ab, to appear ab). Affixation or some stem change (such as umlaut and morphological subtraction) is thus required for the satisfaction of RM so that some independent phonological exponent of the new morpheme surfaces.

(1) Realize Morpheme (RM):
Let α and β be distinct morpheme, and $F(\alpha)$ be the phonological form from which $F(\alpha+\beta)$ is derived to express a new morphosyntactic category β. Then, RM is satisfied for β iff $F(\alpha+\beta)\neq F(\alpha)$.

What is interesting here is that DME is apparently not driven by RM since affixation should be sufficient for the satisfaction of RM in German plurals, for instance. Kurisu (to appear ab) proposes that DME is required since the affix is made invisible for the satisfaction of RM, the whole morphological entity being made opaque (morphological opacity). This is schematically depicted in (2).

(2)



The operative theoretical machinery here is sympathetic correspondence (McCarthy 1999), where Stem≡PrWd serves as the selector constraint. Stem≡PrWd demands the coextensiveness of stem and prosodic word domains such that the relevant affix is disregarded for the purpose of evaluating RM violations. Stem≡PrWd is more formally understood as the propositional logical constraint conjunction of the faithfulness constraints in (3) (cf. Hewitt and Crowhurst 1996; Crowhurst and Hewitt 1997; Itô and Mester 1999). Generalizing morphological opacity over all kinds of affixes is of empirical necessity since they are indeed all involved in DME.

(3) a. Prefixes: Anchor-L(Stem,PrWd)
b. Suffixes: Anchor-R(Stem,PrWd)
c. Circumfixes: Anchor-L(Stem,PrWd) $\wedge$ Anchor-R(Stem,PrWd)
d. Infixes: Contiguity-Stem

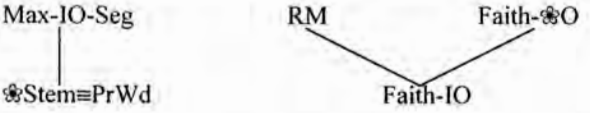
The pivotal idea behind the proposed sympathy system is that the affix is made invisible and therefore some stem modification is recruited for the satisfaction of RM. However, the affix is actually present under duress of Max, resulting in two exponents of a single morpheme. This is exemplified in (4), taking German plural formation. The selector constraint mandates the output not to parse the affix, and this requirement is satisfied only by (4a) and (4c). The latter is more harmonic between these two candidates since RM is crucially ranked over Ident-IO-[+back], which militates against umlaut. The optimal candidate must mimic the umlaut property of the sympathy candidate because Ident-❀O-[back] outranks Ident-IO-[+back], but faithful parsing of the affix is necessary as well due to undominated Max. The result is that the ultimate output carries both the affix and umlaut. This means that a stem modification involved in DME is still governed by the requirement of RM.

(4)

	/Gast-e/$_{Plural}$	Max	RM	Ident ❀O-[bk]	Ident IO-[+bk]	❀Stem≡PrWd
a	Gast	*!	*	*		
b	Gaste			*!		*
c	❀ Gäst	*!			*	
d	☞ Gäste				*	*

The generalized ranking schema of DME is provided in (5). Recapitulating the gist of the idea, ❀Stem≡PrWd obtains the effect of morphological opacity, and RM » Faith-IO motivates some stem modification, the specific change determined by the specific Faith-IO. The stem change is enough to satisfy RM, but Max-IO-Seg » ❀Stem≡PrWd requires faithful parsing of the affix.

(5)



3 Multiple functions of affixation and reduplication

Tagalog has a rich inventory of affixes and takes advantage of reduplication quite productively. The interesting fact is that affixation and reduplication are often combined to express a particular morphosyntactic category (Carrier 1979, 1984; Lieber 1981; McCarthy 1981; Marantz 1982; French 1988). A paradigm involving a verbal stem (*trabahoh* 'work' and *ʔisdaʔ* 'fish') and an agentive affix (*mag-/nag-/maŋ-/naŋ-*) is provided in (6) (French 1988:23). These examples show two prominent facts of Tagalog morphology. First, a phonologically identical prefix is used for more than one morphosyntactic function: *mag-* and *maŋ-* are used both in the basic aspect and in the future aspect whereas *nag-* and *naŋ-* are used in the completive and the continuative aspects. This suggests that these prefixes cannot indicate a unique morphosyntactic category. Second, the same reduplicant shape is recycled: CV-reduplication is employed both by the future aspect and by the continuative aspect. This indicates that the presence/absence of reduplication alone is not sufficient either to disambiguate various morphosyntactic categories.

(6)

Affixed/reduplicated forms	*Gloss*
mag-trabahoh	work (basic aspect)
mag-ta-trabahoh	will work (future aspect)
nag-trabahoh	worked (completive aspect)
nag-ta-trabahoh	be working (continuative aspect)
maŋ-ʔisdaʔ	fish (basic aspect)
maŋ-ʔi-ʔisdaʔ	will fish (future aspect)
naŋ-ʔisdaʔ	fished (completive aspect)
naŋ-ʔi-ʔisdaʔ	be fishing (continuative aspect)

More examples are given in (7) to reinforce the same point. Note in particular that the agent prefix *mag-* is used for multiple morphosyntactic functions: the future aspect, moderative verbs and intensive verbs. Again, this strongly indicates that this prefix is not sufficient to refer to a particular morphosyntactic category. We also find three types of reduplicant shapes: CV (gerunds and occupational nouns), CVV (the future aspect and causative adjectives), and disyllabic reduplication (moderative verbs and intensive verbs). Carrier (1979, 1984) argues that permitted reduplicant shapes are restricted to these three in Tagalog (although disyllabic reduplication has a further ramification, as will be discussed in section 4). Since reduplication plays a central role in Tagalog morphology, the same reduplicant shape is unavoidably recycled frequently.

(7)

a. *Gerunds*

Base form	*Reduplication form*	*Gloss*
(um)-laakad	pag-la-laakad	walking
(um)-sunod	pag-su-sunod	obeying
mag-ʔaaral	pag-ʔa-ʔaaral	studying

b. *Occupational nouns*

Base form	*Reduplication form*	*Gloss*
(um)-tahiʔ	ma-na-nahiʔ	seamstress

c. *Future aspect*

Base form	*Reduplication form*	*Gloss*
mag-liinis	mag-lii-liinis	will clean
(um)-takboh	(um)-taa-takboh	will run

d. *Causative adjectives*

Base form	*Reduplication form*	*Gloss*
ʔantok	na-kaa-ka-ʔantok	causing sleepiness

e. *Moderative verbs*

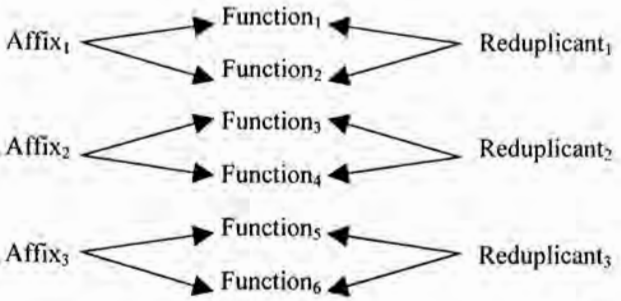
Base form	*Reduplication form*	*Gloss*
mag-liinis	mag-liinis-liinis	clean a little
mag-walis	mag-walis-walis	sweep a little

f. *Intensive verbs*

Base form	*Reduplication form*	*Gloss*
mag-sugat	(mag-)ka-sugat-sugat	be thoroughly covered with wounds

The observation made above leads to the conclusion that neither affixation nor reduplication alone is usually sufficient to express a certain morphosyntactic category. As depicted in (8), the selection of a particular affix and a particular shape of the reduplicant jointly determine a unique function, as emphasized by Lieber (1981:159-160). Tagalog thus presents very strong evidence that DME is real in natural languages because it is not redundant.

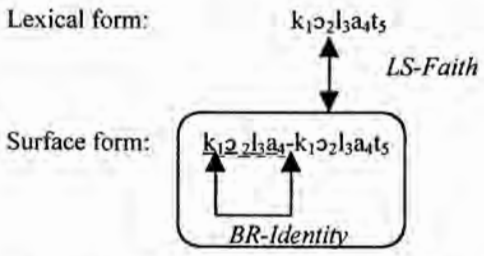
(8)



Building upon the proposal made in the previous section, the simultaneous occurrence of affixation and reduplication can be considered as follows. The affix contained in the underlying representation is made opaque through Stem≡PrWd. The designated sympathy candidate undergoes reduplication to satisfy RM. The ultimate output form is required to carry over the reduplicative property of the sympathy candidate through a relevant Faith-❀O constraint. Finally, the final output must faithfully parse the underlying affixal material because of high ranked Max-IO-Seg.

Before demonstrating the analysis, I need to clarify an assumption concerning reduplication. I assume here a reduplication model of the kind proposed by Spaelti (1997) in which the input corresponds to the entire reduplication form as shown in (9). This is remarkably different from the full model of reduplication advanced by McCarthy and Prince (1995) since input-base correspondence and input-reduplicant correspondence are separated in their model. An important consequence of the model depicted in (9) is that a single input segment corresponds to two output segments when reduplication occurs, and therefore, Integrity, which militates against an input element from having more than one output correspondent, is violated (see also Buckley 1998 and Struijke 1998 for similar proposals).

(9)



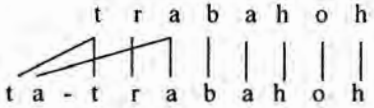
Given this background, the analysis of DME in Tagalog is given in (10). Since reduplication is involved in addition to suffixation, the relevant Faith-IO is Integrity-IO. The sympathy candidate is the form which employs reduplication to fulfill RM but does not parse the underlying affixal material. Since the optimal candidate must carry over the reduplicative property of the sympathy candidate, Max-❀O becomes crucial.

(10)

	/mag-trabahoh/$_{Future}$	Max IO	RM	Max ❀O	Integrity IO	❀Stem ≡PrWd
a	trabahoh	*!**	*	**		
b	mag-trabahoh			*!*		*
c ❀	ta-trabahoh	*!**			**	
d ☞	mag-ta-trabahoh				**	*

There is an important question concerning Stem≡PrWd here: why does the sympathy candidate (10c) satisfy the selector constraint despite the fact that the left edge segment of the base does not occupy the left periphery of the entire prosodic word? This is not a question specific to Tagalog since Stem≡PrWd is defined in such a way that no element other than a stem may be contained in a prosodic word. This indicates that the question is relevant to suffixal and infixal reduplication as well. I contend that the reason why (10c) satisfies the selector constraint is captured by the assumption that Faith-IO constraints are satisfied if they are satisfied either in the base or in the reduplicant. They do not have to be satisfied in both dimensions. This idea is the same as 'Broad IO-faithfulness' proposed by Struijke (1998). As schematically shown in (11a), the two reduplicative segments share the same input segments with two base segments, and therefore, Anchor-L(Stem,PrWd) is satisfied by the reduplicant. On the other hand, Anchor-R(Stem,PrWd) and Contiguity-Stem are violated by the reduplicant whereas they are satisfied by the base. The reason why Contiguity-Stem is violated by the reduplicant is that the base-medial [r] is skipped. Thus, as encapsulated in (11b), all faithfulness constraints consisting of Stem≡PrWd are satisfied by (10c), and therefore, Stem≡PrWd is effectively fulfilled.

(11) a.



b.

	Anchor-L (Stem,PrWd)	Anchor-R (Stem,PrWd)	Contiguity Stem
Base	*violated*	*satisfied*	*satisfied*
Reduplicant	*satisfied*	*violated*	*violated*
Entire form	*satisfied*	*satisfied*	*satisfied*

4 Determining the reduplicant shape

The goal of this section is to present an analysis which accounts for the precise reduplicant shapes attested in Tagalog. Given that a particular morphosyntactic category is associated with a specific reduplicant shape, the following discussion is tightly connected to DME in Tagalog. I argue that the variation of Tagalog

reduplication is considered as emergence of the unmarked (McCarthy and Prince 1994) derived from interactions of independently motivated constraints.

Tagalog has three kinds of reduplication: (i) base-initial CV where vowel shortening takes place if the base-initial vowel is long, (ii) base-initial CVV where vowel lengthening takes place in the reduplicant if the base-initial vowel is short, and (iii) disyllabic. Although the disyllabic reduplication examples in (7e, f) appear to be total reduplication, disyllabic reduplication has another branch. In all the examples in (12) (Carrier 1984:293), the shape of the reduplicant is consistently CV(C).CVV where the entire first syllable and the CV of the base-second syllable are copied, the second vowel undergoing lengthening. The crucial difference between (7e, f) and (12) is the size of the base. When the base is disyllabic, the whole base is copied including the coda consonant of the second syllable. But the coda consonant of the second syllable is not copied if the base is larger than two syllables. Carrier (1979, 1984) regards (7e, f) and (12) as two sub-branches of a single reduplication type.

(12)

Base form	Reduplication form
tahiimik	tahii-tahiimik
baluktot	baluu-baluktot
kalansiŋ	pagka-kalaa-kalansiŋ
ʔintindiŋ	ʔintii-ʔintindiŋ

Given this basic description of the three reduplicant shapes, the generalization is summarized in (13). In (13), affixes are omitted to focus our attention on reduplication.

(13)

Type	Morphological category	Reduplicant shape	Example
(I)	Gerunds Occupational nouns	CV	la-laakad su-sunod ka-kandilah
(II)	Future aspect Causative adjectives	CVV	lii-liinis taa-takboh guu-gupit
(III)	Moderative verbs Intensive verbs	σσ σCVV	walis-walis baluu-baluktot

(13) indicates that each morphosyntactic category is connected to a particular reduplicant shape. Although the earlier literature such as Carrier (1979, 1984), Lieber (1981), McCarthy (1981) and Marantz (1982) employs various templates to derive the right reduplicant shapes, I demonstrate that the templatic effects are obtained through constraint interactions a-templatically. Comparing CV-reduplication and CVV-reduplication, it is obvious that these reduplicant shapes are associated with something special to morphosyntactic categories because vowel shortening and lengthening can never be obtained in the same context for purely phonological reasons. I demonstrate that the morpheme-peculiar nature is captured by relativizing morpheme-specific faithfulness constraints.

Considering the vowel length contrast between (13I) and (13II), vowel shortening occurs in the former while lengthening takes place in the latter. As a pertinent constraint which motivates vowel shortening, I assume *LongV (*LV) (Rosenthall 1994). By contrast, the driving force of vowel lengthening has to do with stress facts. Schachter and Otanes (1972:16), Carrier (1979:118-119) and Soberano (1980:36) maintain that vowel length is contrastive in Tagalog. But French (1988) argues that CVV is not a legitimate syllable. Rather, building on the observation that both primary and secondary stress causes phonetic vowel lengthening on a non-final syllable (French 1988:63) and that the syllable created by reduplication attracts foot-level (secondary) stress (French 1988:72), a stress-based vowel lengthening process is proposed. This idea is the opposite of Schachter and Otanes (1972), Carrier (1979, 1984) and Soberano's (1980) claim that stress is sensitive to vowel length. In any case, it is clear that vowel length and stress have a mutual correlation, which is enough for our purposes.

As the driving force of vowel lengthening, I descriptively assume Align-R(RED,$\sigma_{\mu\mu}$). It maintains that the rightmost reduplicated syllable must be heavy. Although RED is contained in this alignment constraint, it should not be taken as the input morpheme existent in the underlying representation. As discussed above, reduplication obtains when Integrity is ranked low enough. But the grammar still needs to be able to distinguish the base and the reduplicant since Faith-BR could not be computed otherwise. RED refers to the copied materials in the output. Thus, RED does not have any serious input status here.

In Tagalog, the size of the reduplicant is maximally disyllabic. Spaelti (1997) discusses that the size of the reduplicant can be properly adjusted by alignment constraints. Crucially, Align-L(Ft,PrWd) » Max-BR yields foot size reduplication, and Align-L(σ,PrWd) » Max-BR monosyllabic reduplication. I take crucial advantage of the alignment constraints as size restrictors, henceforth abbreviating them as AllFtL and AllσL respectively. Given that only two syllables are maximally copied, AllFtL is undominated in the BR-dimension. The base is not subject to the restriction imposed by the restrictors, however. This shows that Max-IO dominates them.

Beginning with (13I), AllσL is not sufficient, taking [ka-kandilah]. Two serious competitors need to be considered: [kaa-kandilah] and [kan-kandilah]. The actual form violates Align-R(RED,$\sigma_{\mu\mu}$), so *LV must be ranked over it to rule out [kaa-kandilah]. Second, I employ NoCoda as the pertinent constraint penalizing [kan-kandilah]. As demonstrated in (14), this analysis properly restricts the size of the reduplicant to CV. The three high ranked constraints prohibit any deviance from CV-reduplication. The same analysis holds of cases where the base-initial syllable contains a long vowel, as illustrated in (15).

(14)

	/kandilah/$_{\text{Type (I)}}$	No Coda	AllσL	*LV	Max BR	Align RED
a ☞	ka-kan.di.lah	**	6		******	*
b	kaa-kan.di.lah	**	6	*!	******	
c	kan-kan.di.lah	***!	6		*****	
d	kaa.di-kan.di.lah	**	10!	*	****	*

(15)

	/laakad/$_{\text{Type (I)}}$	No Coda	AllσL	*LV	Max BR	Align RED
a	laa-laa.kad	*	3	**!	***	
b ☞	la-laa.kad	*	3	*	***	*
c	laa.kad-laa.kad	**!	6	**		
d	la.kad-laa.kad	**!	6	*		
e	la.ka-laa.kad	*	6!	*	*	*
f	la.kaa-laa.kad	*	6!	**	*	

Turning to CVV-reduplication in (13II), Max-BR and Align-R(RED,$\sigma_{\mu\mu}$) still need to be ranked beneath AllσL, but they must outrank *LV. This obtains the effect of the CVV reduplicant shape. As illustrated in (16) and (17), CVV-reduplication surfaces irrespective of the vowel length of the base-initial syllable. Two important remarks are in order. First, Max-BR and Align-R(RED,$\sigma_{\mu\mu}$) are jointly reranked with respect to *LV to explain the contrast between (13I) and (13II). Second, this reranking is conceptualized in terms of morphosyntactic markings. The reduplicant shapes are morpheme-dependent, so morphological information must be encoded in some form. This is implemented by relativized faithfulness where relativization has to do with morphosyntactic functions. Since gerunds and occupational nouns belong to type (I), long vowels are prohibited in the reduplicant as in (14) and (15), but possessing a heavy syllable is more important in type (II) such as the future aspect and causative adjectives. Given NoCoda, long vowels are required.

(16)

	/liinis/$_{\text{Type (II)}}$	No Coda	AllσL	Max BR	Align RED	*LV
a ☞	lii-lii.nis	*	3	***		**
b	li-lii.nis	*	3	***	*!	*
c	lii.ni-lii.nis	*	6!	*	*	**
d	lii.nis-lii.nis	**!	6			**

(17)

	/gupit/$_{\text{Type (II)}}$	No Coda	AllσL	Max BR	Align RED	*LV
a	gu-gu.pit	*	3	***	*!	
b ☞	guu-gu.pit	*	3	***		*
c	gup-gu.pit	**!	3	**		
d	gu.pi-gu.pit	*	6!	*	*	
e	gu.pit-gu.pit	**!	6			

Finally, consider (13III). It is obvious that Max-BR and Align-R(RED,$\sigma_{\mu\mu}$) must be ranked over AllσL in this case. The question is how the different behaviors of the coda and vowel lengthening attested between disyllabic and longer bases can be well captured. I demonstrate that this string dependency is indeed understood as an emergence of the unmarked effect. Cases where the base is longer than two syllables follow rather straightforwardly given the discussion so far, as illustrated in (18).

(18)

	/ba-baluktot/$_{\text{Type (III)}}$	No Coda	Max BR	Align RED	AllσL	*LV
a	ba-ba.luk.tot	**	*****!*	*	6	
b	baa-ba.luk.tot	**	*****!*		6	*
c	ba.lu-ba.luk.tot	**	****	*!	10	
d ☞	ba.luu-ba.luk.tot	**	****		10	*
e	ba.luk-ba.luk.tot	***!	***		10	
f	baa.lu-ba.luk.tot	**	****	*!	10	*

The same ranking makes a wrong prediction for cases where the base is disyllabic, however, because the base-final consonant would not be copied under duress of NoCoda, contrary to fact. My proposal is that the ranking in (18) can be retained but another crucial constraint must be introduced: Hierarchical Anchor-BR (HierAnch-BR) which requires that both edges of the reduplicant be anchored at the base (cf. Itô, Kitagawa and Mester 1996). If HierAnch-BR is ranked over NoCoda, the right result obtains, as shown in (19).

(19)

	/walis/$_{\text{Type (III)}}$	HierAnch BR	No Coda	Max BR	Align RED
a	wa-wa.lis	*!	*	***	*
b	waa-wa.lis	*!	*	***	
c	wa.li-wa.lis	*!	*	*	*
d	wa.lii-wa.lis	*!	*	*	
e ☞	wa.lis-wa.lis		**		

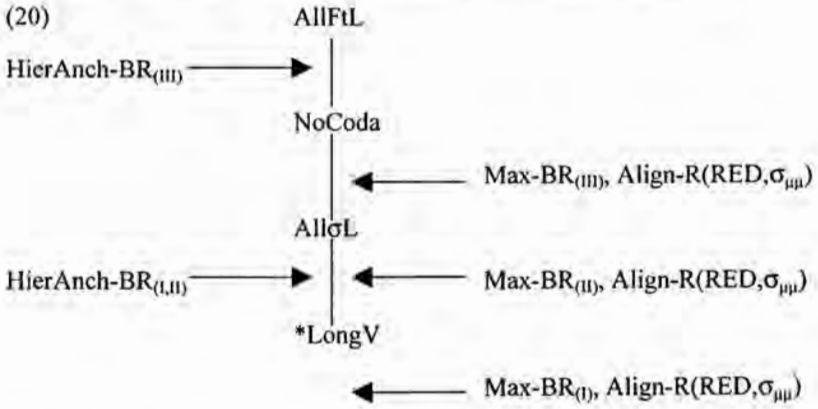
The introduction of HierAnch-BR does no harm to cases where the base is larger than two syllables. Suppose that AllFtL outranks HierAnch-BR. The reduplicant must be partial in those cases, so HierAnch-BR is necessarily violated to satisfy higher ranked AllFtL. This indicates that HierAnch-BR plays no decisive role in (18), and therefore, the evaluation in (18) still holds.

HierAnch-BR cannot occupy a fixed ranking position, however. Taking (13I) and (13II) into consideration, HierAnch-BR should not be ranked over AllσL because total reduplication is expected otherwise when the base is disyllabic:

AllFtL is vacuously satisfied in such cases, so HierAnch-BR enjoys a decisive role. HierAnch-BR is also a faithfulness constraint, so it is also relativized with respect to various morphosyntactic categories. For (13I) and (13II), HierAnch-BR is ranked below AllσL to avoid total reduplication of disyllabic bases.

Summarizing the analysis above, the whole constraint ranking is given in (20). The three patterns of Tagalog reduplication are emergence of the unmarked effects. But the degree of (un)markedness of the reduplicant is different from morphosyntactic category to category. Given (20), CV-reduplication is the least marked, and disyllabic reduplication is the most marked among the three types. This difference is explained without templatic constraints through relativized faithfulness constraints with respect to morphosyntactic functions.

(20)



5 Conclusion

In this paper, I addressed the question of how the cooccurrence of affixation and reduplication is to be explained. I proposed that the simultaneous exponents of a single morpheme are captured through the notion of morphological opacity. The gist of the idea is that the underlying affixal material is made opaque. Given REALIZE MORPHEME as the impetus of phonological expressions of morphemes, affixation is not a sufficient strategy. An additional stem modification is motivated by this intuitive idea. I argued that sympathy theory independently developed to handle phonological opacity plays a central role in implementing the idea theoretically. Tagalog exhibits three types of reduplication. Given that a given morpheme is associated with a particular reduplicant shape, the variation of the reduplicant shapes must be taken into account as well. I argued that it is successfully explained through the notion of relativized faithfulness. Integrating the analysis in sections 3 and 4, both double morphemic exponence and the variation of the reduplicant shapes are accounted for. To close this paper, it is in order to remark that DME is not attested in all morphosyntactic categories in Tagalog. This suggests that sympathetic correspondence is not always active. This follows from the assumption that the selector constraint and concomitant sympathetic correspondence are activated by certain morphemes. When a given morpheme does not activate them, no reduplication occurs.

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References

Bach, Emmon and Robert King. 1970. "Umlaut in Modern German", *Glossa*, **4**, 3-21.

Buckley, Eugene. 1998. "Integrity and Correspondence in Manam Double Reduplication", *Proceedings of the North East Linguistic Society*, **28**, 59-67.

Carrier, Jill. 1979. *The Interaction of Morphological and Phonological Rules in Tagalog: A Study in the Relationship between Rule Components in Grammar*. Doctoral dissertation. MIT.

Carrier, Jill. 1984. "Some Problems with Prosodic Accounts of Reduplication", In Mark Aronoff and Richard Oehrle (eds.). *Language Sound Structure*. Cambridge, Massachusetts: MIT Press. 260-286.

Crowhurst, Megan and Mark Hewitt. 1997. "Boolean Operations and Constraint Interactions in Optimality Theory", Ms. University of North Carolina, Chapel Hill and Brandeis University.

French, Koleen. 1988. *Insights into Tagalog Reduplication, Infixation, and Stress from Nonlinear Phonology*. Dallas, Texas: The Summer Institute of Linguistics.

Gnanadesikan, Amalia. 1997. *Phonology with Ternary Scales*. Doctoral dissertation. University of Massachusetts, Amherst.

Hewitt, Mark and Megan Crowhurst. 1996. "Conjunctive Constraints and Templates", *Proceedings of the North East Linguistic Society*, **26**, 101-116.

Itô, Junko, Yoshihisa Kitagawa and Armin Mester. 1996. "Prosodic Faithfulness and Correspondence: Evidence from a Japanese Argot", *Journal of East Asian Linguistics*, **5**, 217-294.

Itô, Junko and Armin Mester. 1999. "The Best-of-the-Best in Danish", Lecture handout delivered at a phonology seminar in Fall 1999. University of California, Santa Cruz.

Janda, Richard. 1982a. "Of Formal Identity and Rule-(Un)Collapsibility: On Lost and Found Generalizations in Morphology", *Proceedings of the West Coast Conference on Formal Linguistics*, **1**, 179-197.

Janda, Richard. 1982b. "On Limiting the Form of Morphological Rules: German Umlaut, Diacritic Features, and the "Cluster-Constraint"", *Proceedings of the North East Linguistic Society*, **12**, 140-152.

Kurisu, Kazutaka. 2000a. "Morpheme Realizations and Phonological Exponence", *Proceedings of the Second GLOW Conference in Asia*. 239-256.

Kurisu, Kazutaka. 2000b. "Multiple Nonconcatenative Allomorphs", In the Phonological Society of Japan (ed.). *Oninkenkyuu [Phonological Studies]* **3**. Tokyo: Kaitakusha. 53-60.

Kurisu, Kazutaka. To appear a. "Double Morphemic Exponence as Morphological Opacity", *Proceedings of the Chicago Linguistic Society* **36**. Volume 2: The Panels.

Kurisu, Kazutaka. To appear b. "Morphological Opacity and Chaha Impersonals", In the Phonological Society of Japan (ed.). *Oninkenkyuu [Phonological Studies]* **4**. Tokyo: Kaitakusha.

Lieber, Rochelle. 1981. *On the Organization of the Lexicon*. Doctoral dissertation. University of New Hampshire.
Lieber, Rochelle. 1992. *Deconstructing Morphology: Word Formation in Syntactic Theory*. Chicago and London: The University of Chicago Press.
Lodge, Norwich. 1989. "A Non-Segmental Account of German Umlaut: Diachronic and Synchronic Perspectives", *Linguistische Berichte*, **124**, 470-491.
Marantz, Alec. 1982. "Re Reduplication", *Linguistic Inquiry*, **13**, 435-482.
McCarthy, John. 1981. "A Prosodic Theory of Nonconcatenative Morphology", *Linguistic Inquiry*, **12**, 373-418.
McCarthy, John. 1999. "Sympathy and Phonological Opacity", *Phonology*, **16**, 331-399.
McCarthy, John and Alan Prince. 1994. "The Emergence of the Unmarked: Optimality in Prosodic Morphology", *Proceedings of the North East Linguistic Society*, **24**, 333-379.
McCarthy, John and Alan Prince. 1995. "Faithfulness and Reduplicative Identity", In Jill Beckman, Laura Walsh-Dickey, and Suzanne Urbanczyk (eds.). *University of Massachusetts Occasional Papers in Linguistics 18: Papers in Optimality Theory*. 249-384.
Prince, Alan and Paul Smolensky. 1993. "Optimality Theory: Constraint Interaction in Generative Grammar", Ms., Rutgers University and University of Colorado, Boulder.
Robinson, Orrin. 1975. "Abstract Phonology and the History of Umlaut", *Lingua*, **37**, 1-29.
Rosenthall, Samuel. 1994. *Vowel/Glide Alternation in a Theory of Constraint Interaction*. Doctoral dissertation. University of Massachusetts, Amherst.
Rose, Sharon. 1997. *Theoretical Issues in Comparative Ethio-Semitic Phonology and Morphology*. Doctoral dissertation. McGill University, Montreal.
Samek-Lodovici, Vieri. 1993. "Morphological Gemination", Paper presented at Rutgers Optimality Workshop I. Rutgers University. October, 1993.
Schachter, Paul and Fe T. Otanes. 1972. *Tagalog Reference Grammar*. Berkeley: University of California Press.
Soberano, Rosa. 1980. *The Dialects of Marinduque Tagalog*. Pacific Linguistics Series B-No.69. Department of Linguistics, Research School of Pacific Studies, The Australian National University.
Spaelti, Philip. 1997. *Dimensions of Variation in Multi-Pattern Reduplication*. Doctoral dissertation. University of California, Santa Cruz.
Strauss, Steven. 1976. "The Nature of Umlaut in Modern Standard German", *CUNYforum*, **1**, 121-144.
Struijke, Caro. 1998. "Reduplicant and Output TETU in Kwakwala", *University of Maryland Working Papers: Papers in Phonology*, **7**, 150-178.
Walker, Rachel. 1998. *Nasalization, Neutralization, and Opacity Effects*. Doctoral dissertation. University of California, Santa Cruz. [Published from Garland Press, 2000].
Wiese, Richard. 1996a. "Phonological versus Morphological Rules: On German Umlaut and Ablaut", *Journal of Linguistics*, **32**, 113-135.
Wiese, Richard. 1996b. *The Phonology of German*. Oxford: Clarendon Press.
Zwicky, Arnold. 1967. "Umlaut and Noun Plurals in German", *Studia Grammatica*, **6**, 35-45.

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Kucasin is a Long-distance Anaphor.

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1. Introduction

Korean is a language with a rich anaphoric system. It has one reciprocal expression, *selo,* and four anaphors, namely, *caki* ('self'), *casin* ('self'), *cakicasin* ('selfself'), and *kucasin* ('himself'). The two monomorphemic anaphors are treated as long-distance anaphors whereas bimorphemic *kucasin* is uniformly regarded as a local anaphor along with *cakicasin*, and it seems that there is no controversy over this binary distinction in the relevant literature.

However, quite a few linguists who study East Asian languages have recently noted that expressions like *kucasin*, Japanese *karezisin* ('himself') or Chinese *taziji* ('himself/herself') may not behave exactly like English local anaphor *himself.* For Korean, it is known that the form was introduced into the language in the late 1930s by some novelists who were influenced by Western literature. This may explain why it still sounds foreign to the majority of Koreans except linguists educated in the US and is seldom used in discourse or formal writing. Nevertheless, many of those who follow the traditional LGB syntactic framework argue that it is a part of Korean anaphoric system and that its binding behavior is identical to English *himself.* They provide sentences like the following as evidence.

(1) Yengswu$_i$-nun kucasin$_{i/*j}$-ul talun hoywen-tul-eykey sokeyhayssta.[1, 2]
Yengswu-Top himself-Acc other members-Pl-Dat introduced
'Yengswu introduced himself to other members.'

(2) Yengswu$_i$-nun Chelswu$_j$-ka kucasin$_{*i/j/*k}$-ul nemwu mitnuntako
Yengswu-Top Chelswu-Nom himself-Acc too much trust
sayngkakhanta.
think
'Yengswu thinks that Chelswu have too much confidence in himself.'

Native speakers who were asked for judgment indicated that the above data have some English flavor, and preferred *cakicasin*, a clear local anaphor, in place of *kucasin*, for natural local reading. This will cast doubt upon the well-

accepted view that *kucasin* is a genuine *himself*-type local anaphor and a part of Korean anaphoric system. As I will show in section 2, for most people, if *kucasin* is used in the language at all, its principle meaning, perhaps the only reading, must be 'he/him himself,' a pronominal expression combined with an emphatic reflexive. Under this emphatic reading, long-distance binding (henceforth LDB) seems to be possible. The purpose of this paper is to newly identify *kucasin* as a thus-far unidentified long-distance anaphor and account for its LDB effects within Chomsky's (1995, 1998) minimalist approaches to syntax.

2. Long-distance Binding Effects of *Kucasin*

Native speakers I consulted uniformly agree that they hardly use *kucasin* in discourse, as mentioned above, and that if they use the form at all, they would use it with a meaning that is semantically different from English *himself*. In data (3) through (10), *kucasin* and *kunyecasin* ('herself') must be translated as an emphatic anaphor combined with a pronoun, namely, 'he/him himself' and 'she/her herself' respectively.

(3) Kucasin/kunyecasin-un kuttay ku cangso-ey issci-an-assta.
himself/herself-Top that time the place-Loc be-Neg-Past
'He himself/She herself was not at the place at that time.'

(4) Ne$_i$-nun kucasin$_j$/kunyecasin$_j$-ul salanghay-yahanta.
you-Top himself/herself-Acc love must
'You must love him himself/her herself (the person himself/herself, but not his/her wealth, his/her fame or his/her social background, etc.,).'

(5) Swunye-nim$_i$-un [nay$_j$-ka kunyecasin$_{i/*k}$-ul pwulsinha-koisstako]
nun-Hon-Top I-Nom herself-Acc distrust-Pres. Prog.
sayngkakhanta.
think
'The nun thinks that I distrust her herself.'

(6) Yenghui$_i$-nun [Bob$_j$-i kunyecasin$_{i/*k}$-ul cohahanta-ko] sayngkakhanta.[3]
Yenghui-Top Bob-Nom herself-Acc like-Comp think
'Yenghui thinks that Bob likes her herself.'

In (3) and (4), the anaphors can be sentence externally bound in the absence of potential antecedents whereas in (5) and (6), they show obligatory sentence internal LDB effects in the presence of a potential antecedent within the same sentence. (7) and (8) show that they must be sentence internally bound by any antecedent that agrees in phi-features (person, number, and gender), and manifest LDB effects. Given this binding behavior, it is obvious that *kucasin* (or *kunyecasin*) has properties of both pronoun and anaphor. Like pronouns, it can be discourse bound as in (3) and (4), but in the presence of a ph-feature-

compatible nominal expression that can serve as a potential antecedent, it must be bound sentence internally just like anaphors: (5) and (6). However, it is by no means an English *himself*-type local anaphor that must find an antecedent inside the same finite clause. With the LDB effects shown in (5) through (8), *kucasin* and *kunyecasin* must be classified as long-distance anaphors with some pronominal properties.

(7) Sarah$_i$-nun [swunye-nim$_j$-i [nay$_k$-ka kunyecasin$_{i/j/*k/*l}$-ul pwulsinha-koisstako]
Sarah-Top nun-Hon-Nom I-Nom herself-Acc distrust-Pres. Prog.
sayngkakhantako] malhayssta.
think said
'Sarah said that the nun thinks that I distrust her herself.'

(8) Jason$_i$-un [halapeci$_j$-ka [Susan$_k$-i kucasin$_{i/j/*k/*l}$-ul cal tolpoci
Jason-Top grandfather-Nom Susan-Nom himself-Acc well take care of
-an-nuntanunkes]-ul alkoisstako] malhayssta.
-not-Pres. –Acc know said
'Jason said that Grandfather knows that Susan does not take good care of him himself.'

In (9), *Kucasin* occurs in an embedded subject position and the emphatic meaning is the only possible reading. (10) shows that LDB is possible if sentences like (9) is further embedded.

(9) Jason$_i$-un [kucasin$_{i/*j}$-i kuttay ku cangso-ey iss-essta-ko] malhayssta.
Jason-Top himself-Nom that time the place-Loc be-Past-Comp said
'Jason said that he himself was at the place at that time.'

(10) Bob$_i$-un [Sarah$_j$-ka [Jason$_k$-i [kucasin$_{i/*j/k/*l}$-i kuttay ku cangso-ey
Bob-Top Sarah-Nom Jason-Nom himself-Nom that time the place-Loc
iss-esstanunkes]-ul pwuinhayssta-ko] malhayssta-ko] sayngkakhanta.
be-Past -Acc denied-Comp said-Comp think
'Bob thinks that Sarah said that Jason denied that he himself was at the place at that time.'

3. The Dual Nature of Korean *Kucasin*

Although there is no dispute among native speakers over the emphatic reading being the only possible interpretation in data (3) through (10), quite a few syntacticians agree that in sentences like (1) and (2), *kucasin* behaves exactly like English local anaphor *himself* without any trace of emphatic meaning. In the two sentences, the anaphor occurs in an object position and has a potential clausemate antecedent that agrees in phi-features unlike in the other sentences. Then, the relevant generalization distinguishing (1) and (2) from the other cases

is:

(11) *Kucasin* behaves as a non-emphatic local anaphor if and only if it can be locally bound (preceded) by a phi-feature-compatible clausemate coargument.

Even though the claim in (11) is controversial among Korean linguists, with an abundance of LGB literature uniformly treating *kucasin* as a local anaphor, I will assume that the word is homonymic and attempt to provide an account for its dual meaning: one as an emphatic long-distance anaphor and the other as a non-emphatic local anaphor.

The LGB LF movement approaches to LDB (Cole, Hermon, and Sung 1990, Li 1993 etc.), in general, argue that the phenomenon is a result of abstract head-to-head movement into an INFL of higher clauses and thus is possible only for X^0 momomorphemic anaphors, and that XP bimorphemic anaphors do not show such LDB effects since head-to-head movement is not possible for phrasal anaphors. Since this account cannot capture the LDB effects of emphatic *kucasin* (bimorphemic), I will abandon the traditional LGB model and seek a theoretical explanation within Chomsky's (1995, 1998) recent Minimalist Program. I will show how the notion of feature checking can correctly derive the two different readings of *kucasin*, which are determined by the condition in (11).

4. Interpretable vs. Uninterpretable Features

Chomsky (1995, 1998) eliminated deep and surface structures, and argued that a syntactic computation takes place only at two interface levels, namely, LF and PF. In minimalist program, all movements are feature-driven and Move α is rephrased as Atrract F (features). There can be numerous convergent derivations from a given numeration, but the most economical derivation is selected by computational process (optimality). In determining optimality, the principle of Procrastinate is applied to the effect that pure feature movements (covert operations) are less costly than operations pied-piping phonological material (overt movements). There are also other economy considerations such as Minimality, Last Resort, Greed, etc. Formal features that induce syntactic operations are divided into strong and weak features and into interpretable and uninterpretable features.

Strong features are those that must be checked and deleted before Spell-Out, and thus they always triggers overt operations (pied-piping), whereas weak features triggers LF covert movement of pure features without pied-piping. Examples of such strong features are the D feature of English tense (EPP feature) and the feature Q in English complementizer, which induces overt wh-movements in interrogative clauses.

The features that enter into LF interpretation are interpretable. They are thus visible at LF and remain accessible to the computation throughout a given derivation regardless of whether they are checked or not. However, the uninterpretable features must be deleted for convergence as soon as they are checked, so they are invisible at LF and become inaccessible to any further computation once checked. The interpretable features are categorial features, phi-features of nominal expressions and the wh-feature of a wh-phrase while the uninterpretable features are Case features, phi-features of verb, adjective and tense, affixal features and all strong features.

Lee (1998), using this minimalist framework, derives the binding properties of Korean long-distance anaphor *caki* and English local anaphor *himself*. She argues that the former has an anaphoric feature that is interpretable whereas the anaphoric feature the latter has is uninterpretable. The following is the summary of Lee (1998).

> "The crucial fact in deciding whether an anaphor has local binding nature or long-distance binding nature is morphological properties of the anaphor. Korean long-distance binding reflexive *caki* has [+anaphoric] and [+interpretable] features which undergo successive cyclic adjunction at LF, while English local-binding reflexive *himself* has the [+anaphoric] and [-interpretable] features, which are checked off by its binder and eliminated. In English, verb and object move covertly so that the formal features of verb and object are adjoined to the T head at LF. The [+anaphoric] feature of *himself* is pied-piped within its formal features, which are raised onto the T head. The [+anaphoric] feature enters a checking relation with the subject in [Spec, TP], recovering references from this NP. Further movement across the clause boundary is not possible, since the [+anaphoric] feature, which is [-interpretable], is eliminated after checking off. For Korean, The checking procedure occurs repeatedly in a successive cyclic manner. *Caki* first moves to the outer Spec position of VP. Its Case feature and phi-feature are checked off in this position. The unchecked anaphoric feature continues to move to T, where it is checked by the embedded subject. Further movement across the clause boundary is possible, since the anaphoric feature is [+interpretable]." [Lee(1998)]

5. *KU CASIN* vs. *kucasin*

Using the insight provided by Lee (1998), I will attempt to derive the dual meaning of *kucasin* from the interpretable and uninterpretable feature distinction. For the reading of emphatic long-distance anaphor, native speakers put an extra stress on free morpheme *casin* and place a pause after pronouncing *ku*. So the following LF representation can be proposed for the emphatic reading: *KU CASIN*.

(12) $_{DP}$[KU $_{NP}$[CASIN]]

[anaphoric(emphatic):+Interpretable]
DP **[phi-features and D feature]**
[case feature]

/
Spec D'
KU /
NP D
| **[weak nominal feature]**
N'
|
N
CASIN **[emphatic feature]**
Meaning: 'he/him himself'

I propose that *KU CASIN*, in addition to case and phi-features, has another feature, namely, [emphatic] anaphoric feature. This feature must be interpretable since it enters into interpretation at LF. For the reading of non-emphatic local anaphor, I propose LF structure *kucasin*: (13)

(13) $_{DP}$[**ku [casin]**$_i$ $_{NP}$[e_i]]

[anaphoric(reflexive):−interpretable]
DP**[phi-features and D feature]**
[case feature]

/ \
Spec D'
ku / \
NP D**[strong nominal feature]**
| *casin*$_i$
N' [N feature]: checked
| [reflexive feature]
N
e_i

⟹

DP
/ \
Spec D'
ku |
D
casin
reflexive feature
[−interpretable]

Meaning: 'himself'

The difference between *KU CASIN* in (12) and *kucasin* (13) is that the latter has a [reflexive] anaphoric feature and its D^0 has a strong nominal feature unlike the former. *Kucasin* is interpreted as *kucasin*, which has the reflexive feature, only when it can be locally bound by a phi-feature compatible clausemate coargument according to (11). (11) describes the case referred to as reflexive-marking of a predicate by Reinhart and Reuland's (1993) binding condition A, which guarantees obligatory local binding of bimorphemic SELF anaphor. In their view, reflexive marking of a predicate means that the θ-role assumed by

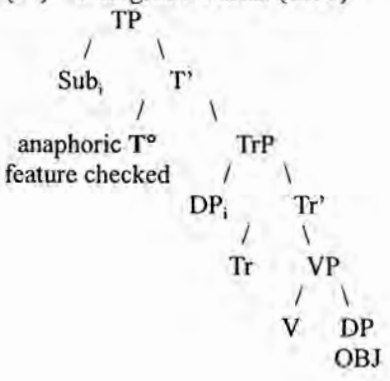
local anaphor *himself* is eliminated and the anaphor forms an A-chain with its antecedent in the minimal domain. As they argue, if a local SELF anaphor reflexive-marking predicates functions as a θ-role reducing operator that turns a transitive predicate into an intransitive one, the reflexive feature must be an uninterpretable feature, since the deletion of this feature would be directly related to the elimination of the object θ-role in the formation of A-chain after LF-feature checking.

If D^0 has the strong nominal feature as Chomsky (1995) argues for expletive D, it will overtly attract *casin* in (13) to have its N feature checked before Spell-Out. The resulting DP structure is such that *ku* and *casin* are in a local spec-head relation, and this reflects the fact that there is no PF pause between the two and no stress is placed on either of the lexical items, in contrast to the DP structure in (12), where D^0 has the weak nominal feature [+interpretable].

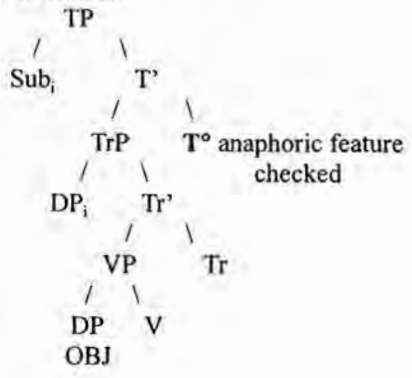
6. Feature Raising and Multiple Checking/Binding Relation

I will assume throughout the paper that emphatic and reflexive features are checked only at T° to recover references from and enter into a binding relation with subject NP.[4] This is analogous to the general LF-movement approaches to LDB, in which INFL is regarded at the final landing site for long-distance anaphors. Then, as can be seen in (14), anaphoric features (emphatic or reflexive) would raise and adjoin to T° at LF along with the phi-features of the anaphor (+interpretable free riders), to be checked against the phi-features of the local subject in [Spec, TP] and recover references from it for binding relation. For tree structure, I adopt the one used by Collins (1997).

(14) a. English: Collins (1997)



b. Korean



After the elimination of [-interpretable] case feature, the [+interpretable] emphatic feature of *KU CASIN*, which remains accessible to further LF-computation, will raise again to a higher T° and enter into checking relation with higher subjects (multiple checking/binding relation), and its phi-features (interpretable free riders) are pied-piped with the emphatic feature all along: LDB. As for [–interpretable] reflexive feature of *kucasin*, which is checked and deleted at the lowest T°, however, is not accessible to further computation and does not raise to a higher T°: Local Binding. Here I am adopting the following definition of Attract α, adapted from Chomsky (1995) and Collins (1997).

(15) Attract α: Minimal Link Condition & Last Resort incorporated
A head H attracts α if and only if α is the closest non-singleton set of features that can enter into a checking relation in its checking domain. A checking relation cannot be established under feature mismatch.
Chomsky (1995): Checking relation ≠ Checking configuration

As one can figure out, the above account will be able to capture the local binding of *kucasin* in (1) and (2) (repeated below as (16)), and the long-distance binding of *KU CASIN* in all the other sentences given above. In (17), the emphatic feature and phi-features of *KU CASIN* move from the most deeply embedded subject position to T° of the intermediate clause and then to the matrix T°, so that the anaphor can enter into a multiple checking & binding relation with all the subjects (LDB). An analogous account can be given for (9).

(16) Yengswu$_i$-nun $_{TP}$[Chelswu$_j$-ka $_{T'}$[T°**(reflexive)** $_{T'P}$[**kucasin**$_{i/j/*k}$-lul
Yengswu-Top Chelswu-Nom **T°reflexive feature** himself-Acc
[–interpretable]: checked & deleted
nemwu mitnuntako sayngkakhanta.
too much trust think
'Yengswu thinks that Chelswu have too much confidence in himself.'

(17) Multiple Checking Relation
Bob$_i$-un $_{T'}$[T°**(emphatic)** $_{TP}$[Jason$_k$-i $_{T'}$[T°**(emphatic)**
Bob-Top **T° emphatic feature** Jason-Nom **T° emphatic feature**
[+interpretable]: checked **[+interpretable]: checked**
$_{TP}$[**kucasin**$_{i/k/*l}$-i kuttay ku cangso-ey iss-esstanunkes-ul
himself-Nom that time the place-Loc be-Past -Acc
pwuinhayssta-ko sayngkakhanta.
denied-Comp think
'Bob thinks that Jason denied that he himself was at the place at that time.'

In (7), repeated below as (18), the emphatic feature and phi-features of *KUNYE CASIN* ('her herself') will directly move to the second highest T°

position and then to the matrix T° to enter into multiple checking (binding) relation with the two subjects (*swunyenim* and *Sarah*), hence its LDB effects. However, the emphatic feature and its free riders (phi-features) will not move into the local T° position because, as specified in (15), they cannot enter into a checking relation in the checking domain of the head due to a feature mismatch. The local T° will not attract the features of *KUNYE CASIN* because of the feature mismatch between them and its spec *nay* ('I'). According to Chomsky (1995), no checking relation can be established in a mismatching checking configuration, and this accounts for the local obviation effects in the sentence.[5]

He also makes it clear that "there is nothing to prevent α from skipping some intermediate head γ that offers no features to be checked."(Chomsky 1995, p.307) Then, the issue of Head Movement Constraint would not arise here since the features of the emphatic anaphor can skip its local T°, which offers no features to be checked, and directly move into the next higher T-head for a proper checking relation. The minimalist program, in general, assumes that Rizzi's (1990) Relativized Minimality and cyclicity hold only before Spell-Out, but not for post-Spell-Out LF feature movement and head adjunction. So the LF-operation in (18) would not pose a problem for the Minimal Link Condition.

(18) Mutiple Checking Relation

Sarah$_i$-nun $_{T'}$[T°**(emphatic)** $_{TP}$[swunye-nim$_j$-i $_{T'}$[T°**(emphatic)**
Sarah-Top **T°emphatic feature** nun-Hon-Nom **T° emphatic feature**
[+interpretable]: checked **[+interpretable]: checked**
$_{TP}$[nay$_k$-ka T'[T° $_{TrP}$[**kunyecasin$_{i/j/*k/*l}$**-ul pwulsinha-koisstako
I-Nom **T°no feature-attraction** herself-Acc distrust-Pres. Prog.
Feature mismatch
sayngkakhantako malhayssta.
think said
'Sarah said that the nun thinks that I distrust her herself.'

An analogous explanation can be given to (5), (6), (8) and (10). In (3) and (4), the interpretable features of the emphatic anaphor do not raise since no checking relation can be established within the sentences: (15). Therefore *KU CASIN* or *KUNYE CASIN* fails to recover references from any sentence-internal NP, and the anaphor is simply sentence externally bound.

7. Summary

The purpose of this paper was to elucidate the dual nature of Korean *kucasin*: one as thus-far unidentified emphatic long-distance anaphor *KU CASIN* and the other as non-emphatic local anaphor *kucasin*. In so doing, I employed

Chomsky's (1995, 1998) minimalist approaches to syntax. First, I differentiated the distribution of *KU CASIN* from that of *kucasin*: *kucasin* behaves as a non-emphatic local anaphor (*kucasin*) if and only if it can be locally bound by a ph-feature-compatible clausemate coargument ((1) and (2)). Secondly, It was shown how the two different readings can be best represented by two different DP structures as in (12) and (13). Finally I showed that the notion of feature checking can correctly derive the binding behavior of the anaphor. I argued that *KU CASIN* has the [+emphatic] anaphoric feature and *kucasin* the [+reflexive] anaphoric feature. The LDB effects of the former was attributed to the interpretable emphatic feature, which can enter into multiple checking/binding relation with higher subjects, whereas the local binding effects of the latter was imputed to the uninterpretable reflexive feature, which is checked and deleted at the lowest T^0 position to enter into binding relation only with the local subject. Monomorphemic Korean long-distance anaphors *caki* and *casin* would have interpretable anaphoric features, and local anaphors *cakicasin*, *selo* (reciprocal expression) and English *himself* must have uninterpretable reflexive features. Then, accounts similar to that given in this paper may be provided for them as well.

Notes

1. The following abbreviations are used in this paper: Top = topic marker; Comp = complementizer; Nom = nominative case marker; Acc = accusative case marker; Dat = dative case marker; Pl = plural; Loc = locative; Neg = negation; Hon = honorific marker; Pres = present tense; Pres. Prog = present progressive; Past = past tense.

2. *Yengswu* and *Chelswu* in data (1) and (2) are typical male names.

3. *Yenghui* is a typical female name in Korean.

4. This accounts for the subject-orientation effects that *kucasin* shows regardless of which anaphoric feature it has (emphatic or reflexive): (i) and (ii). Also see Harbert (1995), which shows that morphologically complex anaphors are not necessarily subject-oriented.

(i) Yengswu$_i$-nun Tom$_j$-eykey kucasin$_{i/*j}$-ul sokeyhayssta.
Yengswu-Top Tom-Dat himself-Acc introduced
'Yengswu introduced himself to Tom.'

(ii) Jason$_i$-un Tom$_j$-eykey [kucasin$_{i/*j}$-i kuttay kekiey iss-essta-ko] malhayssta
Jason-Top Tom-Dat himself-Nom that time there be-Past-Comp said
'Jason told Tom that he himself was at the place at that time.'

5. One might wonder why in (18) the emphatic feature does not move alone to the local T° without pied-piping the free riders (phi-features). The solo raising would obviate the feature mismatch, and this would enable the emphatic feature to enter into a checking/binding relation with the local subject. The fundamental question is why the phi-features must always be pied-piped with the anaphoric feature to yield the right results. Here I am adopting a version of Poole's (1995) Total Checking Principle: "The most economical operation is one where an element moves to, or is inserted into, a position where all of the formal features it bears enter into a checking relation."[p. 126, Collins (1997)]

References

Bickerton, Derek. 1987. "He himself: anaphor, pronoun, or---?" *Linguistic Inquiry*, **18**: 345-348.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: The MIT Press.

Chomsky, Noam. 1998. "Minimalist Inquiries: the Framework," *MIT Occasional Papers in Linguistics*, **15**.

Cole, Peter, Hermon, Gabriella, and Lee-May, Sung. 1990. "Principles and Parameters of Long Distance Reflexives," *Linguistic Inquiry*, **21**: 1-22.

Collins, Chris. 1997. *Local Economy*. Cambridge, Mass.: The MIT Press.

Harbert, Wayne. 1995. "Binding Theory, Control, and Pro," in G. Webelhuth, ed., *Government and Binding Theory and The Minimalist Program*. Cambridge, Mass.: Blackwell.

Hermon, Gabriella. 1994. "Long-distance Reflexives in UG: Theoretical Approaches and Predictions for Acquisition," in Lust, B., G. Hermon and J. Kornfilt, eds., *Binding, Dependencies, and Learnability*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.

Lasnik, Howard. 1991. "On The Necessity of Binding Conditions," in R. Freidin, ed., *Principles and Parameters in Comparative Grammar*. Cambridge, Mass.: The MIT Press.

Lee, Hyeran. 1998. "A Feature-based Account of Long-distance Anaphora," *Korean Linguistics* **9**: 133-150.

Li, Yafei. 1993. "What Makes Long Distance Reflexives Possible?" *Journal of East Asian Linguistics* **2**: 135-166.

Li, Yafei. 1994. "The Japanese Dialectal Monomorphemic zisin and Its Theoretical Implication: A Contrast with Chinese ziji," in Lust, B., G. Hermon and J. Kornfilt, eds., *Binding, Dependencies, and Learnability*. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc.

Manzini, Maria Rita, and Kenneth, Wexler. 1987. "Parameters, Binding Theory and Learnability," *Linguistic Inquiry* **18**: 413-444.

Poole, Geoffrey. 1995. "Constraints on Local Economy," in P. Barbosa et al, eds., *Is the Best Good Enough?* Cambridge, Mass.: The MIT Press.

Progovac, L. 1992. "Relativized Subject: Long Distance Reflexives without Movement," *Linguistic Inquiry* **23**: 671-680.

Reinhart, Tanya. 1983. *Anaphora and Semantic Interpretation.*: London: Croom Helm.

Reinhart, Tanya, and Eric, Reuland. 1993. "Reflexivity," *Linguistic Inquiry* **24**: 657-720.

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Topic Clauses in Korean

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In this paper we will argue that Korean topicalisation construction is neither filler-gap construction of kind suggested by Pollard & Sag (1994) nor some kind of adjunction proposed by Gunji (1987). In transformational grammar, it has been assumed that topicalisation construction involves the movement to the specifier of CP. In HPSG, topicalisation construction involves a filler connected to a gap by the SLASH feature. However, Korean topic clauses are different from their English counterparts. There is a special topic particle *nun* that is different from the case of the missing constituent, thus, the LOCAL properties of the topic and the missing constituent are not the same. Second, the topic clauses without missing constituents exist. Thus, we assume that topics might not be related to gaps in the clause preceded by topics. That is, Korean topic clause constructions do not involve the SLASH feature. Gunji's analysis that topics are adjuncts are unlikely to apply to Korean topic clauses since there is only one topic in a clause. Then we will suggest an alternative analysis based on Vallduvi & Engdahl's (1994) analysis of Catalan.

1 The Differences between English & Korean Topic Clauses

1.1 English topic clause

English topicalisation is simple. In transformational grammar, it is explained as a movement to the specifier of CP leaving a trace in the original position, as shown in (1):

(1) Harry*i*, Emma likes ____*i*.

In Head-Driven Phrase Structure Grammar (henceforth HPSG, Pollard & Sag 1994), there is no movement and the filler has all the LOCAL properties of the missing constituent as in the following:

(2) Harry*i*, Emma likes ____*i*.
(3) To Harry, Emma talked ____*i*.
(4) *Harry*i*, Emma talked ____*i*.
(5) Harry, Emma saw ____*i*.
(6) To Harry, Emma saw ____*i*.

Second, the distance between the filler and the gap is unbounded, as in (7), (8) and (9):

(7) Harry*i*, Emma likes ____*I*
(8) Harry*i*, Jane knows Emma likes ____*I*
(9) Harry*i*, William knows Jane thinks Emma likes ____*I*

1.2 Korean topic clauses

Topic phrases in Korean, on the other hand, have rather different characteristics from the English counterparts. First, the topic has a special particle *nun* (after consonant *un*) and the topic marker may not be the same as the gap marker. There are two kinds of the *nun* marked NPs [i] : (type1) the subject and object markers must be omitted: (Type 2) some markers should be present. In type1, the subject and object markers must be omitted, as illustrated in the following:

(10) Harry-*ka* Emma-*rul* joahanta.
Nom Acc like
'Harry likes Emma.'
(11) Emma-(*rul)-*un* Harry-*ka* _____ joahanta.
Nom like
'Emma, Harry likes.'
(12) Harry-(*ka)-*nun* _____ Emma-*rul* joahanta.
Acc like
'As for Harry, he likes Emma.'

The marker in the topic phrase and that in the gap are different. That is, the topic phrases are marked by *nun* while the gaps are marked by *rul* and *ka*, as in (11) and (12), respectively. Therefore, the topic phrase and the gap do not have the

same LOCAL properties assuming that CASE is a local property. In the type 2, some markers should be present, as in (13), (14) and (15):

(13) Emma-ka Harry-ege check-ul juessta.
Nom Dat book Acc give
'Emma gave a book to Harry.'

(14) Harry-ege-nun Emma-ka _____ check-ul juessta.
Dat Nom book Acc give
'To Harry, Emma gave a book.'

(15) ??Harry-nun Emma-ka _____ check-ul juessta.
Nom book Acc give
'To Harry, Emma gave a book.'

The topic phrase and the gap do not have the same LOCAL properties assuming that CASE is a local property. This suggests that, unlike English topic clauses the Korean topic clauses are not a filler-gap construction.

Not all the *nun*-marked phrases are realised as topic phrases. The *nun*-marked phrases are divided into two types: one is a topic and the other is a focus. A topic always appears in the clause initial position whereas a focus appears in the middle of the clauses, as in (16) and (17), respectively:

(16) Emma-*nun* Harry-ka _____ joanta.
Nom like
'Emma, Harry likes.'

(17) Harry-ka Emma-*nun* joahanta.
Nom like
'It is Emma not someone else who Harry likes.'

It is possible to have more than one *nun*-marked phrase in a clause. But only one topic appears in a clause while more than a contrastive can appear in a clause, as in (18):

(18) Emma-*nun* _____ kumyoil-e-*nun* Harry-*nun* mananta.
friday on meet
'As for Emma, it is Harry not someone else and on Friday not other days that she meets.'

In (18), the *nun*-marked phrase, *Emma-nun*, in the clause initial position is interpreted as topic while other *nun*-marked phrases, *kumyoil-e-nun* and *Harry-nun*, are interpreted as focus. In addition, even if the topic is at the beginning of

the sentence, the *nun*-marked phrases can be considered as a focus when two clauses are compared, as below:

(19) Emma-nun suhak-ul jalha -ko Jane-nun sengmul-ul jalhanta
math. Acc is good at and biology Acc is good at
'It is Emma who is good at math & it is Jane who is good at biology.'

The *nun*-marked phrases at the beginning of the sentences, that is, *Emma-nun*, are interpreted as a focus since two clauses are compared in a sentence. It has been controversial whether the *nun*-marked topic and focus are the same category or two distinct categories. Some argue that the particle *nun* has just one category. (Lee H. S 1987, Lee H.W. 1986,1987). They interpret the two *nun* marked NPs within the same category topic. Others (Choe 1977, Kuno 1973, Wee 1995) argue that they are two different kinds of the particle *nun*; topic and focus. In this paper, we will follow the latter argument that the *nun*-marked topic and focus are different categories. Even though both of them have the particle *nun* in common, the interpretations of the topic clauses are not the same as those of focus clauses.

There is another type, the topic clause without no obvious gap. The clause following the topic is guaranteed on its own without a gap, as the following:

(20) Emma-nun [horangi-ka museopta].
tiger Nom is afraid of
'As for Emma, (she) is afraid of tigers.'
(21) Emma-nun [London-i jota].
Nom fond
'As for Emma, she is fond of London.'

In (20) and (21), there are no obvious gaps in the clauses preceded by the topics. What follows the topic phrase syntactically does not involve a gap. This suggests that the Korean topic phrases do not always involve the SLASH mechanism. In English topicalisation construction, topic clauses without gaps also exist. In that the *as for* construction is required, as in (23) and (24):

(22) As for Emma, Harry likes her.
(23) *As for Emma, Harry likes ___.

In English topicalisation there are two kinds of constructions: one is the construction involving gaps, and the other is the *as for* construction involving no

gaps. But, in Korean topicalisation there is only one construction involving both gaps and no gaps.

In addition, where there is a gap it needs not be associated with the topic. A gap can be semantically related to a constituent which is not a topic phrase. There are three possible interpretations of the following sentence:

(24) Emma-nun Jane-ege [Harry-ka ____ pyeonji-rul ponesstako]malhessta.
Dat Nom letter Acc send told
1) As for Emma, she told Jane that Harry sent a letter to Emma.
2) As for Emma, she told Jane that Harry sent a letter to Jane.
3) As for Emma, she told Jane that Harry sent a letter to someone.

Other NPs in the main clause can be associated with a gap in the subordinate clause. That is, the gap can be associated with the topic or the hearer or someone in the discourse. From those, it follows that the Korean topic phrases do not always involve the SLASH mechanism.

We have considered topic clauses with a gap, topic clauses without a gap. Next consider non topic clauses with a gap. A gap can appear without a topic as Korean freely allows missing NPs. The missing subject, object or both appear in Korean since Korean is a *Pro* drop language.

(25) a. Nu -ka Emma-rul joahani?
who Nom Acc like
'Who likes Emma?'
b. Harry-ka (Emma-rul) joahe.
Nom like
'Harry likes (Emma).'

(26) a. Harry-ka nukwu-rul joahani?
Nom who Acc like
'Who does Harry like?'
b. (Harry-ka) Emma-rul joahe.
Acc like
'(Harry) likes Emma.'

It is possible to omit all argument of the verb, as in (27):

(27) _____ _____ Saranghe.
'(I) love (you).'

In (25), (26) and (27), a gap occurs without a topic. Therefore, the clauses with missing constituents can be the independent clauses without the topic, as in (28) and (29):

(28) Emma-nun Harry-ka ____ joahanta.
Top Nom like
'Emma, Harry likes ____.'

(29) Harry-ka ____ joahanta.
Nom like
'Harry likes something/someone.'

In (29), a gap is generated without a topic. This suggests that there is no need for a special mechanism to handle topic clauses with a gap. Such clauses can be seen as a combination of two grammatical features which occurs independently: topics and gaps.

2 Alternative Analyses

Since we assume that the topic dose not involve SLASH mechanism, the topic phrase and the following clause are not syntactically connected. Thus, the filler-gap construction can not be applied as SLASH feature is not involved. Neither can Gunji's assumption that topicalisation is a kind of adjunction. Instead we assume that V&E's analysis of Catalan in Information Packaging can be applied to the Korean topicalisation construction.

2.1 Gunji's (1987) analysis

In his Japanese Phrase Structure Grammar framework (henceforth JPSG) Gunji (87) divides topicalisation into two types: one is topic clauses with a gap (Type 1), and the other is without a gap (Type2). In Type 1, he suggests that the topic phrase is a kind of an adjunction, and that the topic phrase binds the gap by a FOOT feature, equivalent to NONLOCAL feature in HPSG. By his version of the FOOT feature principle, as shown in (30), the value of the SLASH feature is passed up to the mother in complement but not in adjunction. Thus, SLASH feature is not realised in the mother since he assumes that the topic phrase is an adjunction:

(30) FOOT Feature Principle (FFP) (Gunji:165)
a. In complementation: The value of a FOOT feature of the mother unifies with the union of those of her daughters.
b. In adjunction: The value of a FOOT feature of the mother unifies with the union of those of her daughters, with the possible exception that one of the categories in the FOOT values of the daughters unifies with the adjunct and is not passed up to the mother.

Those types of topicalisation are illustrated as below. All Japanese examples in this section are from Gunji's (1987). Type I involves a SLASH feature and type 2 does not involve gaps, as shown in (31) and (32), respectively:

(31) Ken-no haeya-wa oba-ga soozisita. (J)
Gen room Top aunt Nom clean
'As for Ken's room, his aunt cleaned (it).'

(32) Naomi-wa ken-ga 10 nen burini kaettekita. (J)
Top Nom 10 year after came back
'As for Naomi, Ken has come back after 10 year's absence.'

The topic phrase *Naomi* does not bind anything in the following clause. Instead, there is some kind of relationship between the topic *Naomi* and the fact that Ken has come back after 10 year's absence.

We reject Gunji's analysis for three reasons: *first*, there is evidence that a topic phrase is not a kind of an adjunct. If Gunji's assumption that the topic phrase is an adjunct were right, more than one topic phrases could exist in a clause. As noted earlier in (18), it is possible that more than one *nun*-marked phrase can exist in a clause. But, only the *nun*-marked phrase in the clause-initial position is realised as a Topic whereas the other *nun*-marked phrases are realised as focus. The *second* reason why we are against Gunji's analysis is that this version of the FOOT feature Principle is *ad-hoc* in that the only motivation for it is to allow his analysis of topics. Normally in a head-adjunct structure head and the mother have the same value for the SLASH feature. Gunji modifies the FOOT feature principle to allow only his special kind of adjunct. *Third*, it is not necessary to have a SLASH-based analysis for topic clauses with a gap because such examples will be generated, anyway. Note that we assume that topics need not to be related to gaps in the following sentences. Gaps in the clauses can occur independently and topics also can occur independently. This will allow topics and gaps in the clauses combine together without any mechanism like SLASH. In his analysis, there are two kinds of topic phrase constructions, with a

gap and without a gap, but we propose one topic construction involving no gap. From these three reasons, we assume that Gunji's assumption is unlikely to apply to Korean topic clauses. We have argued against Gunji's analysis of topic being an adjunct. More satisfactory option will be Engdahl & Vallduvi's (1994) analysis of Catalan which we will consider next.

2.2 Engdahl & Vallduvi's (1994) analysis

In Information Packaging, sentences differ in how they are said, that is, they differ in the way how their contents are packed, as illustrated in (33):

(33) a. Mary hates [F CHOCOLATE].
b. Mary [F HATES] chocolate.
c. Chocolate Mary [F HATES]. (E&V 94:44)

Those sentences have the same information but they are packaged in different ways. Sentences are partitioned into focus-ground articulation which plays a central role in Information Packaging. In a sentence, FOCUS is an informative, new, dominant, or not-expected part while GROUND is a non informative, known, or expected part. Engdahl & Vallduvi (1994) consider the FOCUS as 'only contribution that a sentence S makes to the information state of the hearer at the time of utterance. All sentences have a focal segment ....the GROUND is already subsumed by the input information state and acts as an usher for the focus (E&V 94:44)'. The GROUND is in turn divided into two subtypes, that is,

Link and Tail 'Link indicates *where* the focus should go in the input information state, and Tails indicate *how* the focus fits there (E&V 94:44)'. Each sentence has a level of organisation, that is, Information Structure. This information Structure of the sentence is presented as part of the CONTEXT field in HPSG. The three information primitives, that is, FOCUS, LINK and TAIL, are combined in the different instruction types. The instruction types are the followings:

(34) Four instruction types:
a. link-focus (l-f)
b. link-focus-tail (l-f-t)
c. all-focus (all-f)
d. focus-tail (f-t)

Here, we will mainly consider the first two instruction types, *link-focus* and *link-focus-tail* since we will assume that topic phrases are related to *link* like the left-dislocated elements in Catalan. The structure of those instruction types is realised differently in languages. For example, in English, Information packaging is expressed through intonation rather than word order.

(35) English (Vallduvi & Engdahl 1994:48)
a. l-f : [L The president] [F hates the Delft CHINA SET.]
b. l-f-t : [L The president] [F HATES] [T the Delft china set.]

On the other hand, in Catalan, the syntactic position is significant for informational structure. The nuclear stress occurs in the core part whose word order is verb-obj-subj. Every major constituent within the core part is interpreted as a focus, indicated by [F...] in the followings:

(36) Catalan (V & E 1994:48)
a. l-f: El president1 [F odia el joc de porcellana de DELFT t1.]
hate the Delft china set
b. l-f-t: El president1 [F l2'ODIA t2 t1,]el joc de porcellana de Delft2

If an argument of the verb is to be interpreted as a non focus, it must be clitic-dislocated or detached away from the sentential core, as in (a) and (b). More than one argument can be left-dislocated or right-dislocated. This suggests that Catalan allows more than one topic. The left-dislocated phrases are related to links while the right-dislocated phrases are related to tails. In (a) the subject *El president* 'the president' is left-dislocated. In (b) the subject *El president* 'the president' is left-dislocated and the object *el joc de porcellana de Delft* 'the Delft china set' is right-dislocated.

Endahl & Vallduvi argue that dislocation construction in Catalan is different from the filler-gap construction by Pollard & Sag (94). In the filler-gap schema, a filler-daughter is matched up with a gap and the CONTENT of the FILLER-DTR is token-identical with the CONTENT of the gap. However in E&V's detachment constructions 'a detached phrase cooccurs with a clitic or agreement marker. The detached phrase provides additional information concerning an argument which is realised as a clitic or constrained by a particular choice of subject agreement (Engdahl & Vallduvi 94:64)'. Therefore the detached phrase and a clitic would not be token-identical but agree each other, as in (37). It would not be acceptable if the detached phrase and the clitic did not agree each other, as in (38):

(37) a. El Pau*l* no el*l* conec. (E&V94:64)
the-masc Pau no CL-masc 1st-know
'Paul I don't know'

(38) a. *El Pau*l* no la*l* conec. (E&V94:64)
the -masc Pau no CL-fem 1s-know

In (37), the detached phrase *El Pau* does agree with the clitic *el* for masculine while in (38) it does not. Therefore (38) is not acceptable. Engdahl & Vallduvi set up their own Schema for Catalan as illustrated in (39):

(39) Head-Dislocation Schema for Catalan (E&V94:64):

> The DTRS value is an object of sort head-disloc-struc whose HEAD-DTR|SYNSEM|LOCAL|CATEGORY value satisfies the description [HEAD verb[VFORM finite] SUBCAT<>] and whose DISLOC|DTRS|CONTEXT | GROUND value is instantiated and for each DISLOC|DTR, the HEAD|DTR|SYNSEM|LOCAL|CONTENT value contains an element which stands in a binding relation to that DISLOC-DTR.

This means that the head-daughter is a finite sentence and the informational contribution of dislocated phrases is GROUND, and that the relation between the dislocated phrase and the gap is required a binding relation.

However, Korean topic clauses are different in three ways: first, Calatan clitic and agreement system of the kind does not exist in Korean. Instead, the topic phrase has a marker *nun*. Second, only one topic at the beginning of the sentence exists while more than one dislocated phrase is allowed and no ordering restriction is given in Catalan. Third, only NP can be a topic phrase. These suggest that we should set up a constraint on head-topic-phrases different from the head-dislocation schema. One possibility might be as below:

(40) A constraint on the head-topic-phrases:

$$\textit{hd-topic-ph} \Rightarrow \begin{bmatrix} \text{HD-DTR|LOC|CAT|HEAD [VFORM } \textit{fin}\text{]} \\ \text{NON-HD-DTR|LOC|CAT|HEAD [CASE } \textit{nun}\text{]} \end{bmatrix}$$

This rule can be paraphrased that in a headed-topic-phrase, the head-daughter is finite and the non-head-daughter, that is, a topic, is marked by *nun*. This rule does not contain any relation between the dislocated element, here, a topic, and a gap in the following clause. That is, the gap can be interpreted as whatever the

antecedent is. It could be a topic or anything, as in (24). This is also different from the constraint on head-filler-phrases suggested by Bouma, Malouf & Sag (1998) (also Ginzburg & Sag (forthcoming))

3. Summary

In Korean topic clauses, the local properties of the topic phrases are not token-identical with those of the gap. This suggests that, unlike English topic clauses the Korean topic clauses are not a filler-gap construction. In addition, A topic clause can occur without a gap and a gap can occur without a topic. This means that the topic and the gap in the following clause will be generated anyway without the SLASH mechanism. In the case of the topic clauses without a gap, the topic and the following clause do not involve a SLASH mechanism. This suggests that the topic and the gap in the following clause will be generated anyway without the SLASH mechanism. Hence the SLASH mechanism is not needed in Korean topic clause constructions. Instead, we have suggested a constraint which does not contain any relation between the dislocated element, a topic, and a gap in the following clause.

Notes

1. We adopt Sells (1995)'s analysis of suffixes not being phrasal heads. That is, case-marked phrases in Korean are all NPs.

References

Ginzburg, J & Ivan A. Sag. forthcoming. *English Interrogative Construction*. Stanford, CSLI Publications.

Gunji, Takao. 1987. *Japanese Phrase Structure Grammar : A Unification-Based Approach*. Dordrecht: D. Reidel Publishing Company.

Pollard, Carl and Ivan A. Sag. 1994. *Head-Driven Phrase Structure Grammar*. Chicago: University of Chicago Press.

Sells, Peter. 1995. 'Korean and Japanese Morphology from a Lexical Perspective', *Linguistic Inquiry* 26, 277-325.

Vallduvi, E & E. Engdahl. 1994. 'Information Packaging and Grammar Architecture : A Constraint-Based Approach', in *Integrating Information Structure into Constraint-*

Based and Categorial Approaches (DYANA-2 *Report R.1.3.B*), ed. E. Engdahl, 39-79. Amsterdam: ILLC.

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A Note on Verb Movement, Scrambling, and Scope Interaction*

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1. Introduction

Quantifier scope reflects surface position of arguments in Korean. This is a so-called rigidity effect. However, clause-internal scrambling in a non-negation context nullifies this rigidity effect and we get scope ambiguity. The same ambiguity arises when a quantified object is scrambled over a quantified subject in short form negation. The interesting phenomenon is that we do not get this scopal ambiguity in long form negation. A scrambled object here is interpreted in-situ. Thus, the two types of negation constructions in Korean show different behavior with respect to quantifier scope interpretation when a quantified object undergoes clause-internal scrambling over a quantified subject.

In this paper, I will present a new analysis of the relevant data under a recent theory of scrambling in which scrambling is argued to be a feature driven obligatory process (Bailyn (2000), Miyagawa (in press, 2000)). Under the proposed analysis, scrambling in a non-negation context and short form negation context is either A or A'-scrambling, while scrambling in long form negation is invariably A'-scrambling. The reason for this difference is attributed to the difference in the possibility for verb movement.

2. Two Forms of Negation in Korean

There are two types of negation in Korean. One form of negation is pre-verbal (usually referred to as "short form") and the other is post-verbal negation (and is referred to as "long form" negation). Short form negation is given in (1), where the NEG morpheme 'an' precedes the verb 'read.'

(1) Mary-ka chayk-ul an(i) ilk-ess-ta.
Mary-Nom book-Acc NEG read-PST-DC
'Mary did not read the book.'

In long form negation (2), the NEG morpheme follows the verb 'read.' This verb cannot be combined with tense and mood, and instead a dummy verb 'ha' carries this morphology.

(2) Mary-ka chayk-ul ilk-ci an(i) ha(y)-ess-ta.
Mary-Nom book-Acc read-CI NEG do-PST-DC
'Mary did not read the book.'

This *ha*-support (i.e. 'do'-support) has been argued to be evidence for the hypothesis that there is no overt verb movement to T in long form negation (Cho (1994)).[1] The structure of short form negation and long form negation is still controversial but most of the recent works suggest that both types of negation constructions are mono-clausal (Choi (1999), Hagstrom (1997, 1998), Kim (2000)).

3. Scrambling and Scope Interaction

3.1. Scrambling and scope ambiguity

There is a so-called rigidity effect in scope interaction among quantifiers in non-scrambled context (3) in Korean.

(3) Nwukwunka-ka manhun saram-ul pipanhayssta.
Someone-Nom many people-Acc criticized
'Someone criticized many people.' (some > many)

In (3), 'someone' in the higher position takes scope over 'many people.' But when there is clause-internal scrambling of an object, the rigidity effect is nullified. In (4), quantified object 'many people' is scrambled over the subject and the result is ambiguity.

(4) Manhun saram-ul$_i$ nwukwunka-ka t_i pipanhayssta.
Many people-Acc$_i$ someone-Nom t_i criticized
1.'Someone (not necessarily a specific person) criticized many people.'
2.'There are many people each of whom was criticized by someone.'
(1. some (not necessarily specific) > many, 2. many > some)

Unlike clause-internal scrambling in (4), long distance scrambling does not affect scope as shown in (5b). The scrambled object is interpreted in its original position.[2]

(5) a. Nwukwunka-ka [John-i manhun saram-ul pipanhaysstako] mitnunta.
Someone-Nom [John-Nom many people-Acc criticized] believe
'Someone believes that John criticized many people.'
(some > many)
b. Manhun saram-ul$_i$ nwukwunka-ka [John-i t_i pipanhaysstako] mitnunta.
Manypeople-Acc$_i$someone-Nom [John-Nom t_i criticized] believe
'Someone believes that John criticized many people.'
(some > many, * many > some)

3. 2. The difference of scope interaction in two forms of negation constructions

The relevant data are taken from Sohn (1995). First, when there is clause-internal scrambling of an object quantifier over subject quantifier in short form negation (6b), we get the same kind of ambiguity as found in the non-negation context (4).

(6)a.Nwukwunka-ka manhun paywu-lul ani cohahayassta.
Someone-Nom many actors-Acc NEG like-PST-DC
'Someone did not like many actors (i.e. many number of actors).'
b.Manhun paywu-lul$_i$ nwukwunka-ka t_i ani cohahayassta.
Many actors-Acc$_i$ someone-Nom t_i NEG like-PST-DC
1. 'Someone did not like many actors.'
2. 'There are many actors each of whom was not liked by someone.'
(1. some > many, 2. many > some)

However, we do not get this kind of ambiguity in the long-form negation construction (7b).

(7) a. Nwukwunka-ka manhun paywu-lul cohahayci ani hayassta.
Someone-Nom many actors-Acc like NEG do-PST-DC
'Someone did not like many actors.'
(some > many. Plus specific non-quantificational interpretation of 'many actors,' which is independent from scope interactions among quantifiers)
b. Manhun paywu-lul$_i$ nwukwunka-ka cohahayci t_i ani hayassta.
Many actors-Acc$_i$ someone-Nom like t_i NEG do-PST-DC
1.'Someone did not like many actors.'
2. * 'There are many actors each of whom was not liked by someone.'
(1. some > many, 2.* many > some, 3. plus specific non-quantificational interpretation of 'many actors.')

In (7b), the reading in which the scrambled object 'many actors' gets wider scope is absent.

The facts considered so far can be summarized as follows:

(i) There is a scope rigidity effect in non-scrambled context.
(ii) When there is scrambling to clause-initial position, the scrambled phrase is interpreted either at the trace position or at the scrambled position in non-negation and short form negation context.
(iii) In long form negation, a phrase scrambled to the clause-initial position is not interpreted in its surface position but rather in its trace

position.

In standard approaches to Korean scrambling, scrambling both in short from negation (6b) and in long form negation (7b) have been treated as A-scrambling and the scope contrast could not be explained. To account for this scope difference between short form negation and long form negation, I will adopt Miyagawa (in press, 2000)'s recent theory of scrambling.

4. Scrambling as Feature-Driven Obligatory Movement and Scope Interaction

4.1. A-scrambling is EPP-driven

In Miyagawa (in press, 2000), it is proposed that A-scrambling is not an optional operation but is an obligatory operation triggered by an EPP feature on T. In other words, A-scrambling is an instance of EPP movement.

In this section I will briefly summarize Miyagawa (in press, 2000)'s theory of scrambling. First, the EPP feature cannot be checked via the AGREE operation (Chomsky (1998)). It has to be checked by a Spec-Head relation. Therefore, SPEC TP must be filled by a DP which agrees with T. In languages like Korean and Japanese, it is suggested that either the object or the subject can be attracted by the EPP feature on T due to overt verb movement to T, which makes subject and object equidistant with respect to T. Miyagawa (2000) suggests that the occurrence of morphological case marking is another factor that makes scrambling possible as a type of EPP movement, i.e. the occurrence of tense licenses morphological case markers and both the nominative case marker and accusative case marker agree with T. Miyagawa (2000) also assumes that there is abstract Case and that abstract Case on objects is licensed by little *v*.

Examples (8) and (9) illustrate how the analysis of Miyagawa (in press, 2000) works with Japanese data. In the case of SOV order (8a) only total negation reading (i.e. 'all > not' reading) is available, while in the case of OSV order (8b) both total and partial negation readings (i.e. 'all > not' and 'not > all' readings respectively) are available.

(8) a. SOV

Zen'in-ga sono tesuto-o uke-nakat-ta

All-Nom that test-Acc take-Neg-Past

'All did not take that test.' (* not>all, all>not)

b. OSV

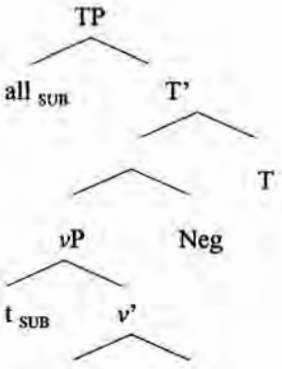
Sono tesuto-o$_i$ zen'in-ga t$_i$ uke-nakat-ta

That test-Acc$_i$ all-Nom t$_i$ take-Neg-Past

'That test, all didn't take.' (not>all, (all>not))

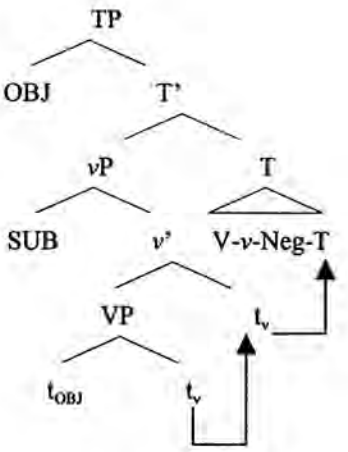
In basic SOV order (8a) the subject moves to SPEC TP motivated by the EPP and takes scope over negation as in (9a).

(9) a.



For scrambled OSV order (8b), however, two derivations are available. The first available derivation is an A-scrambling derivation, where the object moves to SPEC TP to check an EPP feature and the subject stays in situ as in (9b) ('not>all'reading).

(9) b.



The other possible derivation is an A'-derivation, in which the subject moves to SPEC TP, again for EPP reasons, and the object is A'-scrambled to a non-argument position (for focus). As a result, the subject in SPEC TP takes scope over negation, yielding a total negation ('all>not') reading.

4.2. Scrambling and scope interaction in Korean negation constructions

4.2.1. A new analysis of scrambling and QP scope interaction

The crucial assumptions for the current proposal are the following: (i) there is overt verb movement to T in Korean, and (ii) A'-chains reconstruct (Miyagawa (2000), Tada (1993) for obligatory reconstruction for A'-scrambling), while A-chains do not reconstruct (Chomsky (1995), Lasnik (1999)).

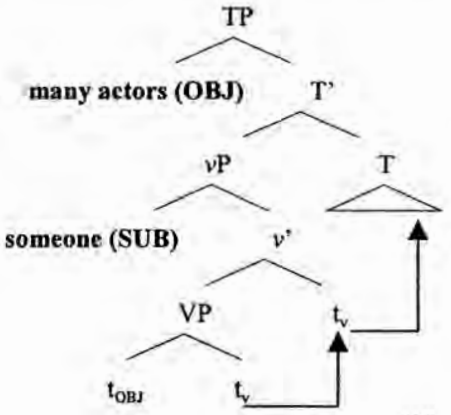
Now the question is how the non-scrambling data in (3) , (5a), (6a), and (7a) can be explained under the current proposal. In (3)- (7), the subject 'someone' moves to SPEC TP to check an EPP feature and the object is below in-situ. In this configuration the subject takes scope over the object and no ambiguity obtains.

In the case of the non-negation and scrambling context in (4) as well as the short form negation and scrambling context in (6b), two derivations are possible due to overt verb movement to T. V-to-T movement makes the subject and the object equidistant with respect to T, thereby allowing either the

subject or the object to satisfy the EPP requirement on T. The former is an A-scrambling derivation and the latter is an A'-scrambling derivation.

First, in the A-scrambling derivation, the object 'many people/ actors' moves to SPEC TP to satisfy the EPP requirement on T and the subject 'someone' stays in situ as in (10). Object scrambling is EPP-driven A-movement here. Under the assumption that A-chains do not reconstruct, the A-scrambled object takes scope over the subject (N.B. NEG is not specified in the tree below[3]).

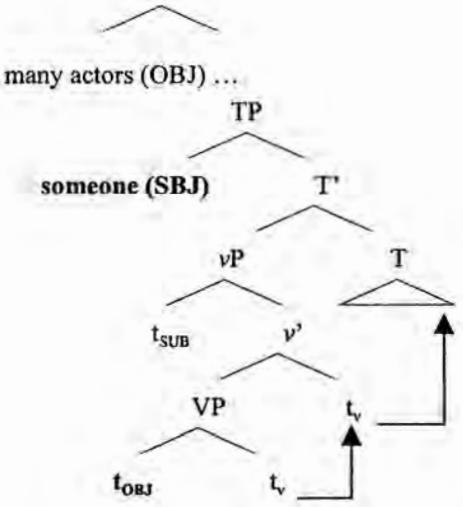
(10)



((6b): many>some)

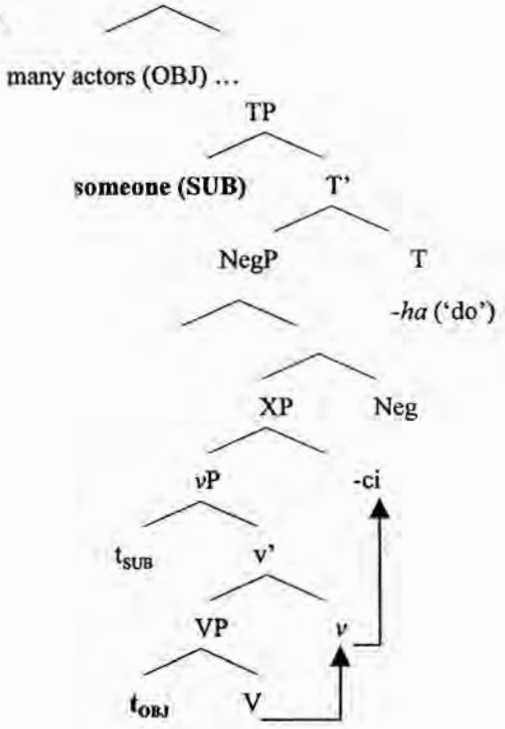
The other available derivation is A'-scrambling derivation. In this derivation the subject moves to SPEC TP to check the EPP feature on T and the object is A'-scrambled to non-argument position (possibly for focus) as in (11). Under the assumption that A'-chains reconstruct, the subject takes scope over the object which is interpreted in its original position.

(11)



Now the interesting question is why we do not get an ambiguity in the case of scrambled long-form negation (7b). I assume that there is no V-to-T movement as shown by evidence from *ha*-support in long form negation, in other words, verb movement is blocked.[4] Therefore, the subject is the closest DP with respect to T, and only the subject can satisfy the EPP feature on T. Consequently, object scrambling cannot be an instance of EPP movement. In this context, it is only A'-scrambling. The object gets interpretation in its original position as in (12).

(12)



Finally, consider the long distance scrambling example (5b). From the perspective of this paper, long distance scrambling cannot be EPP-driven, i.e. scrambling of embedded object to matrix clause cannot be a movement to satisfy EPP checking requirement of the matrix T. Hence, the scrambled embedded object does not get interpretation in the scrambled position.

Under the current proposal, object scrambling in short form negation is either A or A'-scrambling, while object scrambling in long form negation is just A'-scrambling. The scope contrast can be accounted for under the assumption that only A'-chains reconstruct.[5]

4.2.2. More evidence for the current proposal

In this section, I will provide three arguments for the current proposal. First, data showing long distance scrambling from embedded short form negation (13) and from embedded long form negation (14) are considered.

(13) Nwukwuna-lul$_i$ John-i [__ nwukwunka-ka t_i ani yatanchiesstako] sayngkakhanta.
Everybody-Acc,John-Nom [__ someone-Nom t_i NEG scolded-Comp] thinks
'John thinks that someone did not scold everybody.'
(everybody > someone, someone > everybody)

(14) Nwukwuna-lul$_i$ John-i [__nwukwunka-ka t_i yatanchici anhayesstako] sayngkakhanta.
Everybody-Acc,John-Nom[__someone-Nom t_i scold-CI NEG do-PST-Comp] thinks.
(someone > everybody)

Suppose long distance scrambling takes place in two steps. In (13), the first step (scrambling in an embedded clause) may be EPP movement to the embedded SPEC TP when the embedded clause is a short form negation clause (due to verb movement). The next step is A'-scrambling. If the first step is A'-scrambling, we predict that embedded object gets interpretation in-situ. If the first step is A-scrambling, the embedded object is expected to be interpreted in the intermediate position (i.e. embedded SPEC TP), in which 'everybody' takes scope over 'someone.' However, in (14), there is no such EPP movement option in embedded long form negation and the only possible scope reconstruction position is the original position. Hence the difference between (13) (ambiguous) and (14) (non-ambiguous) obtains.

A second argument comes from passivization in long form negation. In (15), the object of the long form negation clause is passivized. Unlike object scrambling in long form negation (7b) where we get inverse scope, we do not get inverse scope in (15).

(15) Nwukwunka-ka$_i$ manhun kijayey-uhey t_i pipantoyci ani hayassta.
Someone-Nom$_i$ many journalists-by t_i criticize-PASSIVE-CI NEG do-PST-DC
'Someone was not criticized by many journalists.'
(some > many, no ambiguity)

Under the current proposal, the scrambling in (7b) is an A'-scrambling in which the scrambled object gets reconstructed, while the passive in (15) is derived by A-movement into SPEC TP and object is interpreted in the moved position.

Finally, scrambling in emphatic constructions also supports the proposed analysis.

(16) Nwukwuna-lul$_i$ nwukwunka-ka t_i cha-ki-kkaci hayassta.
Everybody-Acc$_i$ someone-Nom t_i kick-KI-even do-PST-DC
'Someone even kicked everybody.'
(someone > everybody, ?? everybody > someone)

The emphatic construction has been argued to be an environment in which verb movement to T is blocked and *ha*-support ('do'-support) results (Cho (1994)). In this context it is difficult to obtain an interpretation where the scrambled object gets wide scope. This is expected in the current proposal.

5. Conclusion

To conclude, the scope difference between short form negation and long form negation when there is clause-internal object scrambling can be accounted for under the EPP analysis of A-scrambling proposed in Miyagawa (in press, 2000). The implications of the current proposal can be summarized as follows: (i) Both A-scrambling and A'-scrambling are instances of a feature–driven obligatory process. A-scrambling is triggered by an EPP feature on T and A'-scrambling is (possibly) triggered by focus. (ii) A'-chains reconstruct but A-chains do not reconstruct for quantifier scope interpretation.

Notes

* I have benefited from comments and questions from the participants at the Western Conference on Linguistics (WECOL) 2000 held at California State University, Fresno, October 27-29, 2000. I would also like to thank Gulsat Aygen, Sungeun Cho, Shigeru Miyagawa, Lynn Nichols, John Nissenbaum, and Norvin Richards for their help in my preparation of the paper. I alone am responsible for errors.

1. See Koizumi (1995) and Whitman (1991) for the claim that there is overt verb movement in languages like Japanese and Korean. They argue that verb moves up to C. For the purpose of this paper, it is assumed that verb moves at least up to T.
2. If long distance scrambling occurs in two steps, then we may say that the scrambled object gets interpretation in its original position or in the intermediate position.
3. It is controversial where NEG morpheme in Korean short form negation is located in a phrase structure. The proposed locations are: head or spec of NegP which is below TP, V' or VP adjoined position, etc. It is an important issue when we consider the scope interaction between negation and quantified arguments.
4. In long form negation, the main verb cannot be combined with tense. The tense appears separately, supported by a dummy verb 'ha.' This separation of the verb from tense suggests that the verb does not move up to T.
5. In Sohn (1995), he insightfully argues that the scope contrast in concern is related to the possibility of verb movement (which occurs at LF). In his system, quantifiers take scope in the closest maximal projection by adjoining to it. The first A'-adjunction site of an A'-moved quantifier is the position in which the quantifier takes scope. A-moved quantifiers are blocked from leaving their quantificational force and carry it along. LF verb movement makes a position created by scrambling reanalyzed as an A-position. Therefore, in the case of object scrambling in short form negation, quantified object carries its quantificational force along to the scrambled position in anticipation that the scrambled position will be reanalyzed as an A-position. This analysis has a problem of "look ahead," which is not consistent with minimalist assumptions.

References

Bailyn, John. 2000. "Does Russian Scrambling Exist?," to appear in Simin Karimi (ed.), *Word Order and Scrambling*, Blackwell Publishers.

Cho, Dong-In. 1994. "Functional Projections and Verb Movement," in Y.-K. Kim-Renaud (ed.), *Theoretical Issues in Korean Linguistics*. Stanford, CA: SLA/CSLI.

Choi, Young-Sik. 1999. "Korean Negation as Syntactic Cliticization," S. Kuno et al. (eds.), *Harvard Studies in Korean Linguistics VIII*, Seoul: Hanshin.

Chomsky, Noam. 1995. *The Minimalist Program*, Cambridge, MA: MIT Press.

Chomsky, Noam. 1998. "Minimalist Inquiries: The Framework," *MIT Occasional Papers in Linguistics* **15**, Cambridge, MA: MiTWPL.

Hagstrom, Paul. 1997. "Scope Interactions and Phrasal Movement in Korean Negation," in S. Kuno et al. (eds.), *Harvard Studies in Korean Linguistics VII*, Seoul: Hanshin.

Hagstrom, Paul. 1998. "Phrasal Movement in Korean Negation," *MIT Working Papers in Linguistics: Proceeding of the 9th Student Conference in Linguistics*, Cambridge, MA: MiTWPL.

Kim, Ae-ryung. 2000. "Two Positions of Korean Negation," Handout from 10th Japanese/Korean Linguistics Conference, UCLA, California, October 14, 2000.

Koizumi, Masatoshi. 1995. *Phrase Structure in Minimalist Syntax*. Doctoral

Dissertation, MIT, Cambridge, MA: MiTWPL.

Lasnik, Howard. 1999. "Chains of Arguments," in Samuel D. Epstein and Norbert Hornstein (eds.), *Working Minimalism*, Cambridge, MA: MIT Press.

Miyagawa, Shigeru. 1997. "Against Optional Scrambling," *Linguistic Inquiry* **28**:1-26.

Miyagawa, Shigeru. In press. "*EPP, Scrambling, and Wh-in-situ*," in Michael Kenstowicz, (ed.), *Ken Hale: A Life in Language*, Cambridge, MA: MIT Press.

Miyagawa, Shigeru. 2000. "A-Movement Scrambling and Options without Optionality," to appear in Simin Karimi (ed.), *Word Order and Scrambling*, Blackewell Publishers.

Sohn, Keun-Won. 1995. *Negative Polarity Items, Scope, and Economy*. Doctoral Dissertation, University of Connecticut.

Tada, Hiroaki. 1993. *A/A' Partition in Derivation*. Doctoral Dissertation, MIT, Cambridge, MA: MiTWPL.

Whitman, John. 1991. "String Vacuous V to COMP," Paper presented at GLOW, March 26, 1991.

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Abstract Tone in Kibondei Verbal Morphology: an OT Account*

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1. Introduction

This paper deals with tonal phonology of Kibondei, a Bantu language, spoken in Tanzania. This paper is based on the data solicited from one Kibondei native speaker. Two things will be focused in this paper: *tone shifting* and *downstepping*. An underlying H tone shifts to the penultimate tone bearing unit (this usually means the second vowel in a tri-syllabic words) within or sometimes across a prosodic word boundary. In rare cases where two H tones are juxtaposed side by side within or across a phonological word, the second H is realized with a lower pitch than the first vowel, which is commonly referred to as downstepping in the literature. An interesting aspect of downstepping is that H tones are not usually adjacent in Kibondei, observing OCP on high tones. But, in some cases, they are forced to come together, and in that case, the second H is downstepped in phonetic realization.

In Kibondei, there is tonal contrast between H and L. Phonologically, however, the low tone does not participate in any kind of phonological rules. In this paper, it will be assumed that the low tones are completely underspecified. When an H tone in a prefix shifts to a following tone bearing unit, it moves onto a penultimate position of a verb stem but not to an edge of a prosodic word. An interesting assumption in this paper is that the utterance final H may not be phonetically implemented at all. This will be argued for extensively in this paper. This assumption is crucially attested from the observation that the final edge tone of a prosodic word appears to a following tone bearing unit when another morpheme is suffixed to a verb stem.

Based on this observation, this paper analyzes the tonal pattern shown in Kibondei verbal morphology within an Optimality perspective as in Prince & Smolensky (1993) and McCarthy & Prince (1993). Without optimal domain theory (Cole & Kisseberth 1995) invoked, Kibondei tonal pattern will be accounted for by constraints and their interaction with involvement of Base-Identity (Kenstwoicz 1995).

2. Analysis of Tonal Patterns in Kibondei

2.1. Basic tonal patterns

An underlying H tone of a prefix moves on to a following tone bearing unit (or penultimate tone bearing unit, more generally speaking, except when the shift results in the violation of OCP). The data in (1) show the tonal pattern in the present tense. Verb stems are contrastive in tonal specification by means of the presence and the absence of H-tone specification in underlying representation.

(1) The tonal pattern of the third pronoun subject marker & a toneless verb stem

a.	á + gua	→	agúa	'he/she is buying'
	á + senga	→	aséngа	'he/she is cutting'
	á + funga	→	afúnga	'he/she is tying'
	á + ambika	→	aambíka	'he/she is cooking'
b.	á+gua + nkhánde	→	agúa nkhánde	'he/she is buying food' (nkánde 'food')
	á+funga + nkhamba	→	afúnga nkhamba	'he/she is tying rope' (nkhamba 'rope')

Verb stems in (1) do not have H tones, while the prefix /a/ has an underlying tone. In (1a) and (1b), we see that an H tone of the third pronoun subject marker /a/ shifts to the penultimate position of a verb stem. The final example in (1a) crucially shows that the tone is shifted to the penultimate vowel not just to the next tone bearing unit. Note that it never goes to the final edge of a verb stem. In general we find that H never docks on the final vowel of a prosodic word. This may be viewed as a Nonfinality effect. An underlying tone has the tendency to shift toward the end of a prosodic word, which can be captured by an alignment schematic constraint of tone shift. Accordingly, the following constraints are introduced:

(2) The constraints and their ranking:

a. NonFinality (=*NonFin*):
   H tone is not final in a prosodic word.
b. Align -Right [H, PrWd] (=*Align-R)*:
   H tone must be right aligned with a prosodic word.
c. Ranking argument:
   Tone moves toward the right edge of a prosodic word but not on a final vowel.
   NonFin >> Align-R

The constraint ranking shown in (2c) implies that a shifting H tone never goes to the final edge of a prosodic word though it goes to the rightward as far as it can.

Let us consider the tableau to see how (2c) works:

(3) The evaluation tableau of /á+senga/

/ á + senga/	*NonFin*	*Align-R*
☞ a. aséngа		*
b. asengá	*!	
c. ásenga		**!

(3b) is ruled out since it violates a higher ranked constraint *NonFin*. Between the remaining competitors, (3c) gives way to (3a) that has fewer *Align-R* violations. Note that in (3a), H is realized in a penultimate vowel, and therefore, is one syllable away from the right edge, thus one violation. But in (3c), we see that the high tone is followed by two tone bearing units, vowels, so it is marked twice for *Align-R*. The constraint ranking of *NonFin* >> *Align-R* implies that an H tone never goes to the final edge of a prosodic word. Here, *NonFin* plays a crucial role to restrict how far an H tone shifts in Kibondei. As for (1b), we will defer the discussion 2.3. The point to note here is that the constraints and their ranking in (2) may predict that / á+funga nkhamba / would wrongly predict that *[afunga nkhámba] is more optimal than the actual form [afúnga nkhamba]. It will be shown that this is related to the prosodic form of the independent verb stem [afúnga]. Base-Identity constraint will be introduced in line with Kenstowicz (1995).

2.2. Abstract tones

In spite of the discussion in 2.1, we find that there are some verbs, which do not show any tone shift at all. Consider the following data given in (4):

(4)	á + taga →	átaga	*atága	'he/she is selling'
	á + fisa →	áfisa	*afísa	'he/she is hiding'
	á + kama→	ákama	*akáma	'he/she is milking'
	á + tunga→	átunga	*atúnga	'he/she is piercing'

Unexpectedly, we do not find any tone shift in these words. We may divide Kibondei verbs in two groups and apply tone shift to only one of them. But this is not a wise move because it cannot account for other tonal phenomena in this language. Another observation that we have to make in connection with the data set in (5) is a sudden appearance of the high tones on underlyingly toneless nouns which follow these verbs as shown in (5):

(5) á + taga mphombe → átaga mphómbe 'he/she is selling beer'
(mphombe 'beer')

á + tunga tuni → átunga túni 'he/she is piercing a knife'
(tuni 'knife')

As shown in (5), the nouns without underlying tones (mphombe, tuni) have H tones in the penultimate vowels. The data clearly show that there is a strong correlation between the lack of tone shift and the sudden appearance of H tone in (5). Accordingly, it will be proposed in this paper that the verbs in (4) (and in (5)) actually have H tones in the final syllable as shown in (6). This explains the lack of tone shift. If the prefix H is moved to the following vowel, it results in H tone clash (OCP violation). The verb final H tone will shift to its right if there is any place that it can dock on. This explains the appearance of H tone in the underlyingly toneless nouns as in (6).[1]

(6) The lack of tone shift & the abstract tone appearance

a.	á + tagá → átagá	(*atága)	'he/she is selling'
	á + tagá mphombe → átaga mphómbe		'he/she is selling beer'
b.	á + tungá → átungá	(*atúnga)	'he/she is fiercing'
	á + tungá tuni → átunga túni		'he/she is fiercing a knife'

Assuming that there is an underlying H tone in the final vowels of the verbs in (6), we have to explain why H is not realized in the isolated form. In this paper, it is assumed that in the words in (5), the final H is present in the output form as in (6), but being utterance final, it is overridden by utterance-final intonational contour known as an edge marker in intonation studies as shown in (7).

(7) Lack of phonetic interpretation of final H:
Utterance final H tone has no phonetic correlate.

Now, with this assumption, we can explain the lack of tone shift in (4). To that end, we need additional constraints as in (8):

(8) Additional constraints and the revised ranking
a. *Max (H)*:
H in the input has its correspondence in the output.
b. OCP (H) (= **HH*):
Two adjacent H tones are not allowed.
c. The ranking
Max (H) >> *NonFin* >> **HH* >> *Align-R*[2]

Max (H) outranks *NonFin* in that an edge tone of a verb stem is realized on the following tone bearing unit by means of tone shifting. Now let us take a look at the tableau given constraint ranking as in (9).

(9) The evaluation tableaux of /átagá/ (i) and /átagá mphombe/ (ii)

i) /á + tagá/	*Max (H)*	*NonFin*	**HH*	*Align-R*
☞ a. átagá		*		**
b. átaga	*!			**
c. atágá		*	*!	*

ii) /á + tagá + mphombe/	*Max (H)*	*NonFin*	**HH*	*Align-R*
☞ a. átaga mphómbe[3]				**/*
b. átaga mphombe	*!			**
c. átagá mphombe		*!		**

The tableaux are self-explanatory. Here, *Max (H)* plays an important role in explaining the location of an underlying H tone in the output. In (9i), (9ib) is the worst given the constraint ranking because of the violation of a highly ranked constraint, *Max (H)*. (9ic) is also less optimal than (9ia) which satisfies highly ranked constraints. Here, **HH* plays a crucial role to eliminate (9ic). Further, note that in (9ia), utterance final H tone has no phonetic correlate due to (7). In (9ii), (9iia) becomes optimal, because (9iib) violates *Max (H)* and (9iic) violates *NonFin*.

The data (10) shows a downstepping where two H tones are adjacent.

(10) The downstepping phenomena

áfisá h!éa	'he/she is hiding money'
ákamá m!ée	'he/she is milking milk'
ní h!éa	'it is money'
ní m!ée	'it is milk'

Here, a final edge H tone cannot shift to the following prosodic word that bears its own H tone. Even without shift, we observe in the words given in (10) that two high tones are adjacent to each other. Phonetically, the second H tone will be downstepped. The violation of *OCP (H)* is due to the highest constraint *Max (H)*. Consider the following tableau:

(11) The evaluation tableau of /ákamá mée/

/á + kamá + mée/	*Max (H)*	*NonFin*	**HH*	*Align-R*
a. ákama mée	*!			**/*
b. akámá mée		*	**!	*/*
☞ c. ákamá mée		*	*	**/*

(11a) is the worst since it violates the highest ranked constraint, *Max (H)*. Here, we witness that *Max (H)* crucially outranks *NonFin*, otherwise, (11a) will be wrongly chosen as optimal. Other remaining competitors are tied in *NonFin*.

(11c), however, is the winner because it has just one violation of **HH* while the competing candidate in (11b) has two violations of **HH*.

2.3. Base-identity effect

So far, we have deliberately narrowed possible candidates for the evaluation. If we expand the list of candidates, we may see that the evaluation fails as in (12). This is illustrated by re-examining the evaluation given in (9ii):

(12) The failed evaluation tableau of (9ii) (repeated here)

/á + tagá + mphombe/	*Max (H)*	*NonFin*	**HH*	*Align-R*
?? a.átaga mphómbe				**/*!
b.átaga mphombe	*!			
c.átagá mphombe		*!		
☞ d.atága mphómbe				*/*
e.átaga mphombé		*!		

Here the constraint ranking shown in (8c) wrongly selects (12d) as an optimal output. The real output, however, is (12a). A relevant observation in this connection is that (12d) crucially differs in the tonal pattern of the verb, [átaga]. Note that the actual output form in (12a) retains the tonal pattern of independent verb, while the wrongly selected form in (12d) does not. This seems to be a clear case of Base-Identity requirement as proposed by Kenstowicz (1995).

In order to correct the wrong evaluation shown in (12), we need an additional constraint as shown in (13a) and a subsequently revised ranking as in (13b).

(13) The newly added constraint and the overall ranking

a. Base-Identity (=*BI*):
   Preserve H association of the base.
b. The overall ranking:
   *Max (H) >> NonFin >> *HH, BI >> Align-R*

The ranking between *BI* and **HH* is not relevant. The crucial ranking is that *BI* should dominate *Align-R* and must be dominated by *Max (H)* so that the base tone association in the base is preserved. Further, verb final H shifts to the following noun, which shows that *BI* is dominated by *NonFin*. (13a) comes into play with relevance of the data like (5).

Now let us reconsider the tableau (12) in the tableau (14). Based on the base of a verb stem, the unintended output (14d) is ruled out because of more violation of *BI*. Here, *BI* plays a pivotal role to select the exact optimal output. Therefore, (14a) is optimal.

(14) The reconsideration of the tableau (12)

/á+ tagá + mphombe/	*Max (H)*	*NonFin*	**HH*	*BI*	*Align-R*
☞ a.átaga mphómbe				*	**
b.átaga mphombe	*!				**
c.átagá mphombe		*!			**
d.atága mphómbe				**!	*
e.átaga mphombé		*!		*	**

(Base: átagá, mphombe)

The reason that an H tone easily shifts to the following tone bearing unit is because *BI* is frequently violated in Kibondei. Since *Max (H)* and *NonFin* outrank *BI*, the edge tone of a prosodic word must move to the following docking site though *BI* is additionally sacrificed. In essence, *BI* should dominate *Align-R* so that the base tone association is preserved. Further, the fact that verb final H tone shifts to the penultimate position of following noun stem asserts that *BI* is dominated by *Max-H* and *NonFin*.

Now we are ready to explain why an H in the verb stem does not move to the penultimate vowel of the following noun. Basically, this is due to the ranking of *BI* >> *Align-R*. This ranking implies that the H tone shift from a prefix to a verb stem has no further shift across a morpheme boundary though an underlyingly toneless nouns stem is suffixed. Bearing this in mind, consider the following evaluation tableau:

(15) Base-Identity evaluation of [afúnga nkhamba]

/á + funga + nkhamba/	*Max (H)*	*NonFin*	**HH*	*BI*	*Align-R*
☞ a. afúnga nkhamba					*
b. afunga nkhamba	*!				
c. afunga nkhámba				*!	*
d. afungá nkhamba		*!		*	*

(Base: afúnga, nkhamba)

/á + funga/ is realized as [afúnga] due to the evaluation like (3). This independent verb *afúnga* serves as the base in evaluation. The suboptimal candidate, (15c), crucially violates *BI* by having no H tone in the verb. Without *BI*, (15c) may be as good as the actual output form (15a).

3. Conclusion

This paper generalizes and analyzes the Kibondei tonal behavior within Optimality point of view. As witnessed, two most interesting phenomena are

tonal shifting and downstepping. If an input H tone appears at the edge of a prosodic word, the constraint interaction between *Max (H)* and *NonFin* motivates a tonal shifting in Kibondei. Furthermore, a shifted tone, from time to time, meets an existing H tone across a prosodic word boundary thus a tonal clash takes place (OCP violation). Note that an edge tone does not contain a phonetic implementation at an utterance final position. A tonal shifting to the right side of a prosodic word is based on the fact that *Base-Identity* is frequently violated to satisfy *Max (H)* and *NonFin* in this language.

Since *NonFin* is ranked higher than *Align-R*, an edge tone never goes to the final vowel of a prosodic word. The constraint ranking of *NonFin >> Align-R* suggests that the best docking site for the word-final H is the penultimate position of a following prosodic word. Here, a tonal shifting results from the constraint interaction of *Max (H) >> NonFin >> BI.*

A shifting H tone may result in tonal clashes. The constraint, **HH*, which prohibits two adjacent H tones requires a forced solution such as downstepping to eliminate a tonal clash. As such, Kibondei tonal pattern can be naturally accounted for via the constraints and their interaction within Optimality theoretic framework without resorting to optimal domain theory.

End Notes

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1. Another supporting evidence of stem final H tone can also be found in the following alternation:
(a) nɪ́ + tuni → nitúni 'it is knife' nɪ́ + nguo → ningúo 'it is cloth'
(b) nɪ́ +mani → nímani 'it is grass' nɪ́+nkhuni→ ninkhuni 'it is firewood'
Here again we find the same asymmetry. (a) shows tonal shift while the examples in (b) do not show tone shift. Again we may assume that the nouns in (b) have an H tone in the final syllable. The absence of tonal shift, then, is due to OCP. Further, we see that there are unexpected downstepping in verb-noun sequences:
(c) áfisa 'he/she hiding' áfisáh'éa 'he/she is hiding money'
(d) ákama 'he/she is milking' ákamá m'ée 'he/she is milking milk'
(c) and (d) clearly show that there must be H tone in verb final vowels. Thus positing H tones in these verbs has legitimate supports from the data of Kibondei.
2. Some of the rankings are not proved. So far no crucial ranking is assumed between *NonFin* and **HH*. But, as we go along, the ranking presented here will be argued for.
3. The present constraints and their ranking would choose a nonattested form *[atága mphómbe] as optimal. Focusing on stem final tone in this section, the discussion referring to the wrong form will be made in the next subsection, in connection with Base-Identity (Kenstowicz 1995).

References

Cole, Jennifer and Charles Kisseberth. 1995. "An optimal domain theory of harmony", University of Illinois, Champaign-Urbana. [ROA-22]

Kenstowicz, Michael. 1995. "Base-identity and uniform exponence: alternatives to cyclicity", In J. Durand & B. Lachs (eds.), *Current Trends in Phonology: Models and Methods*. Paris: CNRS.

McCarthy, John and Alan Prince. 1993. "Generalized alignment". In G. Booij & J. van Marle (eds.), *Year Book of Morphology*. Dordrecht: Kluwer.

Prince, Alan and Paul Smolensky. 1993. *Optimality Theory: Constraint Interaction in Generative Grammar*. University of Colorado and Rutgers University.

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The Stative Negator in Mandarin Chinese: A Lexical Prefix

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1 Introduction

Bu is a negative marker used to negate a verb in Mandarin Chinese, as in (1). However, unlike the negative marker 'not' in English, *bu* cannot co-occur with an aspect marker such as *le* in the same clause, as in (2).[1]

(1) Zhangsan bu mai shu.
Zhangsan not buy book
'Zhangsan does not want to buy books.'

(2) *Zhangsan bu mai le shu.
Zhangsan not buy ASP book
'Zhangsan did not buy books.'

Moreover, *bu* cannot occur right before V1[2] in a descriptive/resultative construction as in (3) and (4).

(3) *Zhangsan bu zou de kuai. Descriptive
Zhangsan not walk DE fast
'Zhangsan does not walk fast.'

(4) *Zhangsan bu zou de lei. Resultative
Zhangsan not walk DE tired.
'Zhangsan did not walk to the extent that he got tired.'

The restrictions on the cooccurrence between *bu* and aspect, and between *bu* and descriptive/resultative constructions call for an explanation. C.-T. Huang (1988) proposes Principle P to account for these restrictions, and he suggests that sequences of [*bu* V *le*] and [*bu* V descriptive/resultative clause] are ruled out for semantic reasons. Principle P states that "the negative morpheme *bu* forms an immediate construction with the first V^0 element following it" (Huang 1988, p. 284). According to Principle P, in (2) *bu* is first attached to *mai* and then *le* attaches to the negated verb, *bu-mai*. Such a combination [[*bu-mai*]-*le*] is semantically absurd since the event that has not happened cannot be said to be completed. Along the same line of argument, not-walking is a non-event and thus it cannot be said to have occurred in a certain manner as in (3) or caused a certain result as in (4).

Ernst (1995), however, contends that the cooccurrence restrictions should be explained in terms of *bu*'s morphological and aspectual requirements. That is, *bu*, as a clitic, must attach to the following word and it requires unbounded aspectual situations. Ernst's proposal correctly describes the phenomenon, but it offers no explanation as to why *bu* should select for an unbounded event. On the other hand, Huang's proposal offers a semantic account for the anomalous sequences [*bu* V *le*] and [*bu* V descriptive/resultative clause]. Therefore, this paper assumes Huang's Principle P.

Assuming that Huang's Principle P holds, this paper would like to tackle the following problem: At which level is *bu* attached to V? Is it inserted in NEG position and then attached to V in syntax or it is attached to V as a prefix in the lexicon? This paper proposes two arguments for the second option; that is, *bu* is lexically attached to V. To be specific, negated verbs or modals such as *bu-mai* 'not buy' and *bu-hui* 'not will' are argued to be lexically formed, as negated adjectives in English such as *unforgettable* and *impossible* are.

The first argument discussed in section 2 is constructed under the consideration of the status of both *bu* and *le*. It will be shown that only when *bu* is lexically attached to V and *le* is inserted in Asp position can the cooccurrence restrictions be explained. The second argument presented in section 3 comes from focus/contrast markers, *shi* and *bu-shi*, whose distribution is flexible, and the flexibility can be explained only if *bu* is attached to V in the lexicon.

2 The Status of *Bu* and *Le*

To account for the ungrammatical sequence [*bu* V *le*], the status of both *bu* and *le* has to be considered and there are four possibilities concerning their status. Possibility (I): *bu* and *le* are inserted in Neg and Asp positions, respectively. Possibility (II): both *bu* and *le* are attached to V in the lexicon. Possibility (III): *bu* is syntactic while *le* is lexical. Possibility (IV): *bu* is lexical while *le* is syntactic.

Under Possibility (I), *bu* and *le* are inserted in Neg and Asp positions in syntax, respectively. If Neg has scope over Asp as proposed by Zou (1995),[3] *le* attaches to V before *bu* does, assuming I (Asp) to V movement (Tang 1990, Zhou 1990, etc.). The resulting sequence [*bu* [V-*le*]] is semantically well-formed, and thus the ungrammaticality of [*bu* V *le*] is not captured under this analysis. On the other hand, if Asp has scope over Neg as proposed by Gu (1992), after *le* lowers to V, V-*le* subsequently has to move back to I (Asp) at LF in order to form a proper chain. (Chomsky 1991) The subsequent movement at LF, however, violates the Head Movement Constraint (Travis 1984) as stated in (5) because Neg *bu*, which intervenes between I (Asp) and V, is a potential governor and thus V-*le* to I (Asp) movement violates the Relativized Minimality Condition as in (6). (Rizzi 1990)

(5) Head Movement Constraint (HMC)
Movement of a zero-level category β is restricted to the position of a head α that governs the maximal projection γ of β, where α θ–governs or L-marks γ if α ≠ C.

(6) Relativized Minimality: X α-governs Y only if there is no Z such that
(i) Z is a typical potential α-governor for Y,
(ii) Z c-commands Y and does not c-command X.

Under this analysis, sentences like (2) are ruled out because they violate the HMC and thus are syntactically ill-formed, rather than semantically ill-formed. However, as shown in (7) and (8) aspect markers are incompatible with descriptive and resultative constructions.

(7) *Zhangsan zou-le de kuai. Descriptive
Zhangsan walk-ASP DE fast
'Zhangsan walked fast.'

(8) *Zhangsan zou-le de lei. Resultative
Zhangsan walk-ASP DE tired.
'Zhangsan walked to the extent that he got tired.'

Since no aspect markers are involved in descriptive and resultative constructions, no I-to-V and subsequent V-to-I movements are required. Thus sentences such as (3) and (4) do not violate the HMC. As such, these sentences are not syntactically ill-formed and are predicted to be grammatical under this analysis. Therefore, this analysis cannot account for the cooccurrence restrictions between *bu* and descriptive/resultative constructions.

Possibility (II) assumes that both *bu* and *le* are attached to V in the lexicon. If this is the case, nothing prevents *le* from suffixing to V before *bu* does and the resulting sequence [*bu* [V-*le*]] is semantically well-formed. Therefore, under this analysis, the cooccurrence restriction between *bu* and *le* is not accounted for.

Under Possibility (III), *le* has to attach to V in the lexicon before *bu* attaches to V in syntax. Again the resulting sequence [*bu* [V-*le*]] is semantically well-formed and thus sentences like (2) are wrongly predicted to be grammatical. One may assume that V-*le* has to move to Asp at LF for feature checking (Chomsky 1993) and this LF movement violates the HMC because Neg intervenes between V and Asp. Thus (2) is a case of syntactic ill-formedness. However, this analysis still cannot account for the cooccurrence restriction between *bu* and descriptive/resultative constructions since these two constructions do not involve aspect markers and thus no feature checking is necessary as discussed above. No feature checking means no movement and no violation of the HMC. Therefore, (3) and (4) cannot be cases of syntactic ill-formedness, and another account is called for. Ernst (1995) suggests that [*bu* V *le*] and [*bu* V descriptive/resultative clause] are ruled out because *bu* requires unbounded aspectual situations and [V-*le*] and

[V descriptive/resultative clause] represent bounded events. However, his account only describes the idiosyncratic selectional restriction of *bu*. It achieves no explanatory adequacy and thus is less favored.

Possibility (IV) supposes that *bu* attaches to V in the lexicon and then *le* attaches to *bu*-V in syntax. The resulting sequence [[*bu*-V] *le*] is semantically anomalous and thus ruled out. As such, possibility (IV) accounts for the cooccurrence restriction between *bu* and *le*. *Bu* is thus argued to be a lexical prefix to V in the lexicon.

Moreover, this account can also explain the ungrammaticality of (3) and (4). Under this analysis, *bu* attaches to V in the lexicon and as discussed above, the combination [[*bu*-V] descriptive/resultative clause] is semantically anomalous because a non-existing event [*bu*-V] cannot be said to occur in a certain manner or cause a certain result. Therefore, the ungrammaticality of (3) and (4) results from semantic anomaly.

However, there are cases where the sequence [*bu* V descriptive/resultative clause] seems to be allowed as in (9).

(9) ruguo ni bu zuo de kuai, ni jiu zhui-bu-shang wo. (cf. (3))
if you not walk DE fast you then chase-not-up I
'If you don't walk fast, then you won't catch up with me.'

To account for this type of data, Huang (1988) suggests that *bu* in (9) is supported by an abstract modal element in Infl rather than attach to the verb directly and the sequence [[*bu*-M] [zuo de...]] is not semantically anomalous. Along the same line of argument, this paper proposes that *bu* in (9) contains an abstract modal element such as *hui* 'will' or *yiao* 'want to'. That is, *bu* in (9) denotes 'will not' rather than simply 'not'. Even in cases like (9), *bu* is a lexical prefix, which attaches to M(odal) in the lexicon. The only difference between *bu*-V and *bu*-M is that V in the former cannot be omitted while M in the latter is optional when the reading of modality is clear.

To sum up, after considering the four possible combinations of the status of *bu* and *le*, it is argued that only when *bu* is a lexical prefix and *le* is inserted in Asp position in syntax can the cooccurrence restrictions between *bu* and *le*, and between *bu* and descriptive/resultative constructions be accounted for.

3 Focus/Contrast Markers, *Shi* and *Bu-shi*

Another evidence for a lexical account of *bu* comes from focus/contrast markers, *shi* and *bu-shi*. As discussed in Y.-H. Li (1990), *shi*, as a focus/contrast marker, can be placed before a constituent for the purpose of indicating if this constituent or this constituent plus the following constituents are focused or contrasted as in (10) (Li's (41) 1990:37). (The focused/contrasted parts are in bold face.)

(10) a. Ta ba ta taitai zhaogu-de *shi* **hen hao**.
he BA he wife care- DE be **very well**
'He took care of his wife **very well**.'
b. Ta pao-de *shi* **hen kuai**.
he run- DE be **very fast**
'He runs **very fast**.'

The negative form *bu-shi* also has the function of a focus/contrast marker, as in (11). Like *shi*, *bu-shi* can be placed in front of a constituent to indicate whether this constituent or this constituent plus the following constituents are focused or contrasted.

(11) a. (i) *Bu-shi* **ta ba taitai zhaogu-de hen hao**.
not-be **he BA wife care-DE very well**
'It's not that **he took care of his wife very well**
(ii) *Bu-shi* **ta** ba taitai zhaogu-de hen hao.
'It's not **him** who took care of his wife very well.'
b. (i) Ta *bu-shi* **ba taitai zhaogu-de hen hao**.
'He did not **take care of his wife very well**.'
(ii) Ta *bu-shi* **ba taitai** zhaogu-de hen hao.
'It's not **his wife** whom he took care of very well.'
c. (i) Ta ba taitai *bu-shi* **zhaogu-de hen hao**.
'As for his wife, he did not **take care of her very well**.'
(ii) Ta ba taitai *bu-shi* **zhaogu-de** hen hao.
'It's not **taking care of her** what he did very well to his wife.'
d. Ta ba taitai zhaogu-de *bu-shi* **hen hao**.
'As for taking care of his wife, he did not do it **very well**.'

If *bu* is inserted in syntax, it should occupy the Neg position, whose exact position might vary depending on one's analysis. In any case, Neg is a fixed position in a sentence. That is, if *bu* is inserted in syntax, it should occupy a fixed position rather than a flexible position. As shown in (11), *bu-shi* can occur at the beginning of the sentence (11a), before the BA-phrase (11b), and before the verb (11c-d). Therefore, if *bu* is inserted in syntax, depending on one's analysis, only one (but not all) of the four sentences in (11) is allowed. A syntactic account of *bu* thus cannot account for the distribution of the focus/contrast marker *bu-shi*. On the other hand, if *bu* is lexically attached to *shi* and then *bu-shi* as a whole is inserted as a focus/contrast marker before the constituent to be focused, the flexible distribution of *bu-shi* can be accounted for. Therefore, again *bu* is argued to be a lexical prefix.

4 Conclusion

This paper starts by arguing for Huang's account of the cooccurrence restrictions between *bu* and *le*, and between *bu* and descriptive/resultative constructions. It is assumed that Huang's Principle P that *bu* forms an immediate construction with the following V is valid and the cooccurrence restrictions result from the semantic anomaly caused by such a construction. Since *bu*'s attaching to V before *le* does and thus having a narrow scope over V is just a description of this phenomenon, this paper thus continues to offer an account as to why *bu* must attach to V and why the semantically anomalous sequences [[*bu*-V] *le*] and [[*bu*-V] descriptive/resultative construction] must arise. Two arguments are proposed for a lexical account that *bu* is a prefix attached to V in the lexicon. The first argument is given under the consideration of the status of both *bu* and *le*. It is argued that only when *bu* is lexical and *le* is syntactically inserted in Asp node can the cooccurrence restrictions be accounted for. The second argument comes from the focus/contrast markers, *shi* and *bu-shi*, whose distribution is flexible. The flexible distribution of *bu-shi* can be explained only if *bu* is lexically attached to *shi* and then *bu-shi* is inserted as a unit wherever appropriate.

Even though Ernst's proposal that *bu* requires unbounded situations is a correct description of the cooccurrence restrictions, it offers no explanation as to why *bu* should show such a selectional restriction and thus that proposal is less favored. On the contrary, by arguing that *bu* is a lexical prefix, this paper offers an explanation for *bu*'s cooccurrence restrictions.

Notes

[1] *Mei* instead of *bu* and *you* instead of *le* have to be used to express negation in an aspectual sentence as in (i). (Wang 1965).

(i) Zhangsan mei-you mai shu.
'Zhangsan did not buy books.'

[2] There is always more than one verb in a descriptive/resultative construction, and V1 refers to the first verb in linear order.

[3] Here I only refer to the structure proposed by Zou (1995). Zou assumes that aspect markers such as *-le* are lexically attached to V.

References

Chomsky, Noam. 1991. "Some Notes on Economy of Derivation and Representation", *Principles and Parameters in Comparative Grammar*, ed. Robert Freidin, 417-454. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 1993. "A Minimalist Program for Linguistic Theory", *The View from Building 20*, ed. Kenneth Hale and Samuel Jay Keyser, 1-52. Cambridge, Mass.: MIT Press.

Ernst, Thomas. 1995. "Negation in Mandarin Chinese", *Natural Language and Linguistic*

Theory, **13**.4:665-707.
Gu, Yang. 1992. *The Syntax of Resultative and Causative Compounds in Chinese*. Doctoral dissertation, Cornell University, Ithaca, N.Y.
Huang, C.-T. James. 1988. "*Wo Pao De Kuai* and Chinese Phrase Structure", *Language*, **64**.2:274-311.
Li, Yen-Hui Audrey. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer.
Rizzi, Luigi. 1990. *Relativized Minimality*. Cambridge, Mass.: MIT Press.
Tang, Chih-Chen Jane. 1990. *Chinese Phrase Structure and The Extended X'-Theory*. Doctoral dissertation, Cornell University, Ithaca, N.Y.
Travis, Lisa deMena. 1984. *Parameters and Effects of Word Order Variation*. Doctoral dissertation, MIT, Cambridge, Mass.
Wang, William S-Y. 1965. "Two Aspect Markers in Mandarin", *Language*, **41**.3:457-470.
Zhou, Xinping. 1990. *Aspects of Chinese Syntax: Ergativity and Phrase Structure*. Doctoral dissertation, University of Illinois, Urbana-Champaign, Ill.
Zou, Ke. 1995. "Negation in the Chinese BA-Construction" Paper presented at the 7th North American Conference on Chinese Linguistics, The University of Wisconsin-Madison, June 1995.

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Against Optional *Wh*-Movement

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1 Introduction

Cheng (1991) distinguishes languages based on the strategy they use in forming *wh*-interrogatives. She argues that a given language can use only one of the following strategies: (i) overtly moving the *wh*-element to the scopal position or (ii) leaving the *wh*-element in situ. This analysis predicts that no language can show evidence of optional *wh*-movement. Eastern Armenian[1] and Persian, however, seem to employ both strategies, where *wh*-elements can be in-situ as in (1) or they can be moved overtly to the beginning of the sentence as in (2).[2]

(1) a. Ara-n **vor** **girk**-en e k'artatsel ? *Armenian*
Ara-Nom which book-Acc is read
'Which book did Ara read?'
b. nâder **ki**-ro did? *Persian*
Nader who-Acc saw
'Who did Nader see?'

(2) a. **vor** **girk-en** e Ara-n k'artatsel? *Armenian*
which book-Acc is Ara-Nom read
'Which book did Ara read?'
b. **ki**-ro nâder did? *Persian*
who-Acc Nader saw?
'Who did Nader see?'

The following paper argues that these languages do not have optional *wh*-movement. Evidence from the distributional properties of the two constructions shows that *wh*-in situ and overt *wh*-extraction are two distinct processes. We argue that overt movement of *wh*-phrases is not *wh*-movement in the sense of English, but rather an instance of scrambling. *Wh*-in situ, on the other hand, is

indeed the strategy for forming *wh*-questions in these languages and should be analyzed as an operator-variable relation.

2 Island Effects

In this section, we will examine the effects of overt *wh*-extraction and *wh*-in situ on Complex NPs, Sentential Subjects, Adjuncts and *wh*-islands.

Overt extraction of the *wh*-element from an island results in ungrammaticality, as shown in the following examples:

Complex NPs

(3) a. * **vor yerex-in**$_i$ [ayn mart-un vor x_i sp'anel er] bandark'etsin
which child-Acc that man-Acc that killed was imprisoned
'Which child they imprisoned the man that had killed?'

b.***kojâ**$_i$ ali [in shâye' ke nâder kilinton-o x_i dide]-ro shenide
where Ali this rumor that Nader Clinton-Acc has seen-Acc has heard
'Where Ali has heard the rumor that Nader has seen Clinton?'

Sentential Subjects

(4) a.* **umin**$_i$ [vor vrej-e x_i mat'nel e] amboqj ent'anik-in husahat'ets
whom that Vrej-Nom denounced is whole family-Dat disappointed
'Whom the fact that Vrej denounced disappointed the whole family?'

b.* **Ki** [inke x_i in ketâb-ro xundeh] taajobâvar-e
who this-that this book-Acc has read surprising-is
'Who that has read this book is surprising?'

Adjuncts

(5) a.* **vor t'q-in**$_i$ usutsich-e bark'atsav [vorovhet'ev Garnik'-e x_i tzetzel er]
which boy-Acc teacher-Nom got angry because Garnik-Nom beat was
'Which boy did the teacher get angry because Garnik had beaten?'

b.* **ki(-o)**$_i$ ali [ba'd az in-ke x_i busid] raft madrese
who(-Acc) Ali after from this-that kissed left school
'Who Ali left for school after he kissed?'

Wh-Islands

(6) a.* **ov**$_i$ e Ara-n uzum imana vor x_i *inch girk* e k'artatsel
who is Ara-Nom wanting know-Subj that what book is read
'Who did Ara want to know which book had read?'

b.* **chi**$_i$ nâder mi-xâhad be-dânad ke *ki* x_i xunde?
what Nader Prog-want Subj-know that who has read
'Which book does Nader want to know who has read?'

As the examples (7) through (10) indicate, *wh*-elements in situ also show sensitivity to island constraints.

Complex NPs

(7) a.* [ayn girk-en] es aRnelu [vor **ov** dasaran-um k'artats]
that book-Acc are buy-Fut that who class-Loc read
'Who are you going to buy the book that read in class?'

b.* ali [in shâye' ke nâder kilinton-o **kojâ** dide]-ro shenide
Ali this rumor that Nader Clinton-ACC where has seen-Acc has heard
'Where has Ali heard the rumor that Nader has seen Clinton?'

Sentential Subjects

(8) a.* [vor vrej-e **umin** e mat'nel] amboqj ent'anik-in husahat'ets
that Vrej-Nom whom is denounced whole family-Dat disappointed
'Whom the fact that Vrej denounced disappointed the whole family?

b.* [inke **ki**(yâ) bâ in ma'sale âshenâ hast(and)] xeyli jâleb-e
this-that who(pl) with this issue familiar is(are) very interesting-is
'Who the fact that is familiar with this issue is very interesting?'

Adjuncts

(9) a.*usutsich-e bark'atsav [vorovhet'ev GaRnik'-e **vor t'q-in**$_i$ er tzetzel]
teacher-Nom got angry because Garnik-Nom which boy-Acc was beat
'Which boy did the teacher get angry because Garnik had beaten?'

b.*ali [ba'd az in-ke **ki-o** busid] raft madrese
Ali after from this-that who-Acc kissed went school
'Ali went to school after kissing who?'

Wh-Islands

(10) a. * Ara-n uzum e imana vor **ov** e *inch girk* k'artatsel
Ara-Nom wantingis know-Subj that who is what book read
'Who did Ara want to know which book had read?'

b.*nâder mi-xâhad be-dânad ke *ki* **kodâm ketâb-o** xunde?
nader Prog-want Subj-know that who which book-Acc read?
'Which book does Nader want to know who read?'

Although the data regarding island conditions suggest that the two question-forming strategies have a similar behavior (i.e, both are sensitive to islands), an investigation of the various properties of *wh*-in situ and overt *wh*-extraction indicates that they are, in fact, two distinct phenomena.

3 Landing Site of Overt Extraction

Overt *wh*-movement in languages like English is believed to be to the specifier of CP position. As the following examples show, the fronted *wh*-phrase does not move to the [Spec, CP] in Armenian (11a) and Persian (11b), rather it appears to the right of the complementizer.

(11) a. polis-e uzum e imana *vor* **inch-ov**$_i$ en ays mart-un x_i sp'anel?
police-Nom wanting is know that what-Inst are this man-Acc killed
'The Police wonders that with what they killed this man?'
b. dolat mi-xâd be-doneh *ke* **ki-hâ** sefâratxâne-ro âtish zadand?
gvrnmt Prog-want Subj-know that who-pl embassy-Acc fire hit
'The government wants to know who set the embassy on fire?'

As is shown in (12), when the *wh*-element appears to the left of the complementizer, the sentences are ungrammatical.

(12) a.* polis-e uzum e imana **inch-ov**$_i$ *vor* en ays mart-un x_i sp'anel?
police-Nom wanting is know what-Inst that are this man-Acc killed
b.* dolat mi-xâd be-doneh **ki-hâ** *ke* sefâratxâne-ro âtish zadand?
gvrnmt Prog-want Subj-know who-pl that embassy-Acc fire hit

Another evidence on the landing site of *wh*-movement comes from data on Weak Crossover effects. Leaving the *wh*-phrase in situ gives rise to WCO effects in these languages, as illustrated in (13a) and (14a). Overt *wh*-movement, however, overrides WCO effects as is evident from (13b) and (14b).

(13) a. * ir$_i$ kuyr-e **umin**$_i$ k'rak'ets *Armenian*
his sister-Nom whom shot
'Who$_i$ did his$_i$ sister shoot?'
b. **umin**$_i$ ir$_i$ kuyr-e k'rak'ets
whom his sister-Nom shot
'Who$_i$ did his$_i$ sister shoot?'

(14) a. * mâdar-esh$_i$ **ki$_i$**-ro dust dâre *Persian*
mother-3sg who-Acc like have
'Who$_i$ does his$_i$ mother like?'

b. **ki$_i$**-ro mâdar-esh$_i$ dust dâre
who-Acc mother-3sg like have
'Who$_i$ does his$_i$ mother like?'

It is traditionally assumed that the LF representation for the examples with *wh*-in situ is as in (15), in which the *wh*-element has moved to the [Spec, CP] position for interpretive reasons, leaving a trace which is coindexed with the pronoun to its left, resulting in a Weak Crossover configuration. As is indicated by the * in the (a) sentences above, these constructions are indeed ungrammatical.

(15) * [$_{CP}$ wh$_i$ [$_{IP}$ [... pro$_i$ ...] x$_i$]

If the overtly moved *wh*-phrases were also in [Spec, CP] position as shown in the configuration in (16), we would expect WCO effects as in the in-situ cases. These sentences, however, are grammatical, suggesting that the *wh*-phrase is not moving to the specifier of CP.

(16) [$_{CP}$ wh$_i$ [$_{IP}$ [... pro$_i$ ...] x$_i$]

Hence, the distinct landing sites provide evidence for the difference between the two question-forming strategies. The following section shows that a study of the tense condition supports this generalization.

4 Tense Condition

As exemplified with the following Persian examples, overt extraction of *wh*-phrases from a Subjunctive embedded clause (17a) is more felicitous than from an Indicative embedded clause (17b)[3].

(17) a. **bâ ki$_i$** ali fekr mi-kone [ke nâder x$_i$ be-raqse]
with who Ali thought Prog-do that Nader Subj-dance
'With whom does Ali think that Nader will dance?'

b. ?? **bâ ki$_i$** ali fekr mi-kone [ke nâder x$_i$ xâhad raqsid]
with who Ali thought Prog-do that Nader future danced
'With whom does Ali think that Nader will dance?'

However, there is no difference between a *wh*-in situ appearing in either Indicative or Subjunctive embedded clauses. In both constructions, *wh*-in situ renders grammatical sentences, as is indicated by the following Persian examples.

(18) a. ali fekr mi-kone [ke nâder **bâ** **ki** be-raqse]
Ali thought Prog-do that Nader with who Subj-dance
'With whom does Ali think that Nader will dance?'

b. ali fekr mi-kone [ke nâder **bâ** **ki** xâhad raqsid]
Ali thought Prog-do that Nader with who future danced
'With whom does Ali think that Nader will dance?'

Further evidence for the distinction between the two constructions comes from the interception effects considered in the following section.

5 Interception Effects

If a focused element intervenes between the *wh*-in situ and the matrix CP, where the *wh*-element takes scope, the sentence is ungrammatical. Consider the Armenian examples in (19) and (20).

(19) Ara-n k'artzum e vor **ov** e k'at'v-in k'erak'rel
Ara-Nom thinking is that who is cat-Acc fed
'Who does Ara think that fed the cat?'

(20) *ARA-n e k'artzum vor **ov** e k'at'v-in k'erak'rel
Ara-Nom is thinking that who is cat-Acc fed
'Who is it Ara that thinks fed the cat?'

In (19), the *wh*-phrase appears in-situ in the embedded clause but it takes scope in the matrix CP. However, as soon as the subject of the matrix clause, viz. *Ara*, is focused, the sentence becomes ungrammatical as shown in (20). This suggests that focus prevents the *wh*-element *ov* 'who' to take scope in the matrix clause for its interpretation.

If this line of reasoning is correct, then we expect that changing the matrix verb to a *wonder*-type verb, which selects an interrogative clausal complement, would eliminate any kind of interception by matrix focus since the *wh*-element is interpreted within the embedded clause. As the example in (21) shows, this is indeed the case. In this example, which is minimally different from (20), we see that the focused element in the matrix clause does not interfere with the licensing of the embedded *wh*-element.

(21) ARA-n e uzum imana vor ov e k'at'v-in k'erak'rel
Ara-Nom is wanting know that who is cat-Acc fed
'It is Ara who wants to know who fed the cat.'

The schematic representations of (20) and (21) are provided in (22) and (23), respectively, where +Q represents a question-operator. In order for the *wh*-element in situ to be interpreted in (22), it needs to form a dependency or licensing relation with the question operator in the [Spec, CP] position of the matrix clause and the focused element in the matrix clause intercepts that relation.

(22) $[_{CP}$ +Q $[_{FP}$ [...focus-phrase... $[_{CP'}$[...*wh*-phrase...]]]] = (20)

*

But in the configuration in (23), where the wh-element takes scope in the embedded [Spec, CP] position, focus in the matrix clause has no effect on the interpretation of the *wh*-element.

(23) $[_{CP}$ $[_{FP}$[... focus-phrase...$[_{CP'}$ +Q [...*wh*-phrase...]]]] = (21)

As is evident from the following Armenian sentences, however, focused elements do not intervene in the overt movement of *wh*-phrases.

(24) a. ov e ARA-n k'artzum vor x_i k'at'v-in k'erak'ri
who-Nom is Ara-Nom thinking that cat-Acc feed-Subj
'Who does ARA think that will feed the cat?'
b. **vor mekena-n** DU es k'artzum vor Ara-n aRni
which car-Acc you are thinking that Ara-Nom buy-Subj/3sg
'Which car do YOU think Ara will buy?'

What we have seen in this section is that focus-phrases can intercept the interpretation of *wh*-elements appearing in-situ in an embedded clause but they do not interfere with the overt movement of embedded *wh*-elements.

Similarly, *wh*-elements in situ are intercepted by negation, negative polarity items and other *wh*-phrases in both languages. In contrast, these elements do not block the overt movement of *wh*-phrases. Due to lack of space, we will not present these examples in this paper.

6 DP Islands

In Persian and more so in Eastern Armenian, islands can be nominalized. In these constructions, the verbs are in the infinitival or participial forms. (25a) shows an ungrammatical clause in Armenian, in which the *wh*-element appears in-situ within a complex NP island. The nominalized form of the island is given in (25b), where in contrast with the CP form of the island, the *wh*-element can appear in-situ.

(25) a.* [ayn girk-en] es aʀnelu [vor **ov** dasaran-um k'artats]
that book-Acc are buy-Fut that who class-Loc read
'You are going to buy the book that who read in class?'
b. [**um** k'artatsatz girk]-en es aʀnelu
whose read book-Acc are buy-Fut
'Lit: You are going to buy whose read book?'

Overt *wh*-extraction from within a DP island, however, is ungrammatical as illustrated below:

(26) * **vor yerex-in**$_i$ aysor [x_i sp'anoq mart]- un en bandark'el
which child-Acc today killer man –Acc are imprisoned
'Which child today killing man did they imprison?'

Similarly, while *wh*-phrases may appear in situ in nominalized sentential subject or adjunct islands, as illustrated in (27) and (29), overt movement of a *wh*-element out of these islands is not felicitous, as exemplified in (28) and (30).

Sentential Subjects

(27) [Vrej-i **umin** mat'nel]-e amboqj ent'anik-in husahat'ets
Vrej-Gen whom denouncing-Nom whole family-Dat disappointed
'Lit: Vrej's denouncing whom disappointed the whole family?

(28) * **umin**$_i$ [Vrej-i x_i mat'nel]-e amboqj ent'anik-in husahat'ets
whom Vrej-Gen denouncing-Nom whole family-Dat disappointed
'Who did Vrej's denouncing (of) disappoint the whole family?'

Adjuncts

(29) [**vor mekena-n** t'esnel-uts het'o] toqar gnatsir
which car-Acc see-Abl after left-2sg went-2sg
'Lit: You left after seeing which car?'

(30) * vor t'q-in$_i$ [Gagik'-i x$_i$ tzetzel-u p'atch'aʁ]-ov usutsich-e bark'atsav
which boy-Acc Gagik-Gen beat-Gen reason -Inst teacher-Nom got angry
'Which boy did the teacher get angry because of Gagik's beating?'

7 Summary and Analysis

Table 1 summarizes the distributional properties of *wh*-extraction and *wh*-in situ in Persian and Armenian. The results show that *wh*-in situ and overt movement of *wh*-elements are two distinct phenomena.

Table 1: Distributional Properties of *wh*-extraction and *wh*-in situ

		***Wh*-in situ**	***Wh*-extraction**
Islands and Boundedness	**Sensitive to CP Islands (SSC, CNP, Adjunct, Wh)**	Yes	Yes
	Sensitive to DP Islands	No	Yes
	Tense Condition (Subjunctive effect)	No	Yes
Interception Effects	**Focus Intercepts**	Yes	No
	Negation Intercepts	Yes	No
	NPI Intercepts	Yes	No
	Wh Intercepts	Yes	No

7.1 Subjacency and Overt *Wh*-Movement

We argue that overt extraction of *wh*-elements is sensitive to locality effects and can be captured by referring to the Subjacency Condition. Both CP and DP islands create a barrier for movement as shown in (31a) and (31b), respectively. While tensed clauses constitute an island, overt extraction out of the embedded subjunctive in (31c) is felicitous. This can be accounted for if we assume that the tense of the subjunctive clause is dependent on the matrix tense, thus extending the domain of extraction.

(31) a. CP islands: * $[_{CP}\ \mathbf{wh_i}$ $[_{TP}$ ... $[_{(NP)}[_{CP}$ $[_{TP}$ ... x_i ...]]]]]
b. DP islands: * $[_{CP}\ \mathbf{wh_i}$ $[_{TP}$ ... $[_{NP/DP}$ $[_{TP}$ ... x_i ...]]]]
c. TSC/Subj.effect: $[_{CP}\ \mathbf{wh_i}$ $[_{TP}$ ... [... x_i ...]]]

7.2 No LF Movement

Wh-in situ elements display a different behavior with respect to islands. While *wh*-elements in situ do not sit comfortably in CP islands, they violate DP-islands. If *wh*-in situ involved movement at LF of a *wh*-element or Operator, then both DP and CP constructions should behave as islands. The distinct behavior of *wh*-in situ in DP vs. CP islands indicates that there exists no *wh*-movement at LF (as suggested in Huang (1992) among others) or Operator movement in syntax (Watanabe 1992, Aoun and Li 1993). We propose that the operator is base-generated in the specifier of CP.

7.3 *Wh*-in situ and Minimality

We account for the behavior of *wh*-in situ elements in terms of an operator-variable dependency relation. The interception facts observed can then be explained by Minimality as defined in (32).

(32) The linking of A with B [... A... B...] obeys Minimality iff there is no intervening C [...A...C...B] such that C is linked to another element D, D distinct from B and A. (Li 1992)

As the configurations in (33) illustrate, when A-bar or operator elements, such as focus or negation (represented as XP), appear in between a *wh*-element in situ and its scopal position, an interception effect arises, resulting in ungrammaticality. Following Aoun and Li (1993), we argue that *wh*-in situ is licensed by an operator in the matrix [Spec, CP] and the presence of an intervening operator causes a Minimality effect.

(33) Interception Effects:
* $[_{CP}\ Op_i$ $[_{XP}\ \mathbf{Op}$ ... $\mathbf{wh_i}$ ...]]
* $[_{CP}\ Op_i$ $[_{XP}\ \mathbf{Op}$ $[_{CP}$ ... $\mathbf{wh_i}$ ...]]]
XP = FocusP, NegP, etc.

The contrastive data on *wh*-phrases in situ in CP vs. DP islands can also be captured by Minimality. We assume that DP-islands lack an operator, hence no Minimality effect is observed. CP islands, however, include an operator which intercepts the interpretation of the *wh*-in situ element.

8 Conclusion

In this paper, we studied the properties of *wh*-in situ and overt movement of *wh*-elements in Persian and Eastern Armenian, and we have shown that they are two distinct phenomena. Although not developed in this paper, the behavior of overt *wh*-extraction parallels the properties of scrambled elements in these languages. We therefore propose that overt movement of *wh*-elements is an instance of scrambling. The data clearly show that there is no optional *wh*-movement in these two languages, confirming Cheng's prediction.

In addition, the analysis proposed argues against a movement approach to *wh*-in situ and provides support for an operator-variable relation.

9 Notes

1. Throughout this paper, we use Eastern Armenian and Armenian interchangeably.
2. The following abbreviations are used in the examples: **Nom**-Nominative; **Acc**-Accusative; **Dat**-Dative; **Gen**-Genitive; **Abl**-Ablative; **Loc**-Locative; **Inst**-Instrumental; **Subj**-Subjunctive; **Prog**-Progressive; **Fut**-Future; **sg**-Singular; **pl**-Plural; person agreement is marked with numbers **1,2,3**. The following characters *k', t', p'* represent ejectives and small R is a trill.
3. Eastern Armenian and Persian do not have infinitival clauses similar to English; the Subjunctive is used instead.

10 References

Aoun, Joseph and Abbas Benmamoun. 1998. "Minimality, Reconstruction, and PF Movement", *Linguistic Inquiry*, **29**.4: 569-597.

Aoun, Joseph and Audrey Li. 1993. *Syntax of Scope*. Cambridge, Mass.: MIT Press.

Aoun, Joseph and Audrey Li. 1993. "Wh-Elements in Situ: Syntax or LF?", *Linguistic Inquiry*, **24**.2: 199-238.

Aoun, Joseph and Lina Choueiri. 1999. "Modes of Interrogation". Ms., University of Southern California.

Beck, Sigrid. 1996. "Quantified Structures as Barriers for LF Movement", *Natural Language Semantics*, **4**: 1-56.

Beck, Sigrid and Shin-Sook Kim. 1997. "On Wh- and Operator Scope in Korean", *Journal of East Asian Linguistics*, **6**:339-384.

Cheng, Lisa. 1991. *On the Typology of Wh-Questions*. Dotoral dissertation, MIT.

Chomsky, Noam. 1995. *The Minimialist Program*. Cambridge, Mass.: MIT Press.

Cinque, Guglielmo. 1990. *Types of A'-Dependencies*. Cambridge, Mass.: MIT Press.

Cole, Peter and Babriella Hermon. 1994. "Is There LF Wh-Movement?", *Linguistic Inquiry*, **25**.2: 239-262.

Culicover, Peter W. 1996. "On Distinguishing A'-Movements", *Linguistic Inquiry*, **27**.3: 445-463.

Fiengo, Robert, C.-T. James Huang, Howard Lasnik and Tanya Reinhart. 1987. "The Syntax of Wh-In-Situ", *Proceedings of the West Coast Conference on Formal Lingusitics* 7; Hagit Borer (ed.); pp. 81-98. Stanford, California: CSLI Publications.

Garrett, Edward. 1996. "Wh-in situ and the Syntax of Distributivity", *Syntax at Sunset, UCLA Working Papers in Linguistics*; Edward Garrett and Felicia Lee (eds.); 129-145.University of California at Los Angeles.

Huang, C.-T. James. 1982. "Move Wh in a Language without Wh Movement.", *Linguistic Review*, 1:369-416.

Li, Yen-Hui Audrey. 1992. "Indefinite *Wh* in Mandarin Chinese", *Journal of East Asian Linguistics*, 1: 125-155.

Mahajan, Anoop. 1990. *The A/A-bar Distinction and Movement Theory*. Doctoral dissertation, MIT.

Muller, Gereon and Wolfgang Sternefeld. 1993. "Improper Movement and Unambiguous Binding", *Linguistics Inquiry*, 24.3: 461-507.

Ouhalla, Jamal. 1996. "Remarks on the Binding Properties of *Wh*-Pronouns", *Linguistic Inquiry*, 27.4: 676-707.

Pesetsky, David. 1987. "Wh-in-Situ: Movement and Unselective Binding". In *The Representation of (In)definites*. Eric J. Reuland and Alice G.B. ter Meulen (eds.). Cambridge, Mass.: MIT Press.

Rizzi, Luigi. 1990. *Relativized Minimality*. Cambridge, Mass.: MIT Press.

Shi, Dingxu. 1994. "The Nature of Chinese Wh-Questions", *Natural Language and Linguistic Theory*, 12: 301-333.

Simpson, Andrew. 1999. *Wh-Movement and the Theory of Feature-Checking*. Ms., SOAS, University of London.

Takahashi, Daiko. 1993. "Movement of Wh Phrases in Japanese", *Natural Language and Linguistic Theory*, 11: 655-678.

Tamrazian, Armine. 1994. *The Syntax of Armenian: Chains and the Auxiliary*. Doctoral dissertation, University College London.

Watanabe, Akira. 1992. "Subjacency and S-structure Movement of *Wh*-in-situ", *Journal of East Asian Linguistics*, 1:255-291.

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Is Q an Inherent Feature of Complementisers?

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In the literature (e.g. Chomsky (1995)), Q- features which trigger movement of wh-phrases are supposed to be inherent features of complementisers.[i] In this paper, I would like to offer a different view. That is, I claim that Q-features, which I call Wh-scope features here, are, in fact, inherent features of verbs, not of complementisers.[ii]

The main reason to take this approach is empirical. Once we assume that a Wh-scope feature is an inherent feature of a verb, the fundamental problem of why wh-movement takes place in some languages (e.g. English) but not in others (e.g. Japanese and Chinese) is explained in a reasonable way. What is more, notorious problems like Subjacency condition and successive-cyclic movement of wh-phrases can now be accounted for quite naturally without assuming Chomsky's (1998) "phase".

This paper is divided into two sections. In the first section, I claim that a Wh-scope feature is an inherent feature of a verb and show that this claim is theoretically plausible. To illustrate this, I analyse a simple question in English and show how a Wh-scope feature is checked and how it affects LFs. Then, I consider a simple Japanese question and show that my proposal easily accounts for why Japanese does not have wh-movement and why English has wh-movement. In the second section, I show that my account can explain Subjacency Condition and successive-cyclic movement of wh-phrases better than Chomsky's (1998), which I regard as empirical support for my argument.

1. English

In this section I discuss how a simple English question is derived syntactically. In other words, I show why movement of a wh-phrase takes

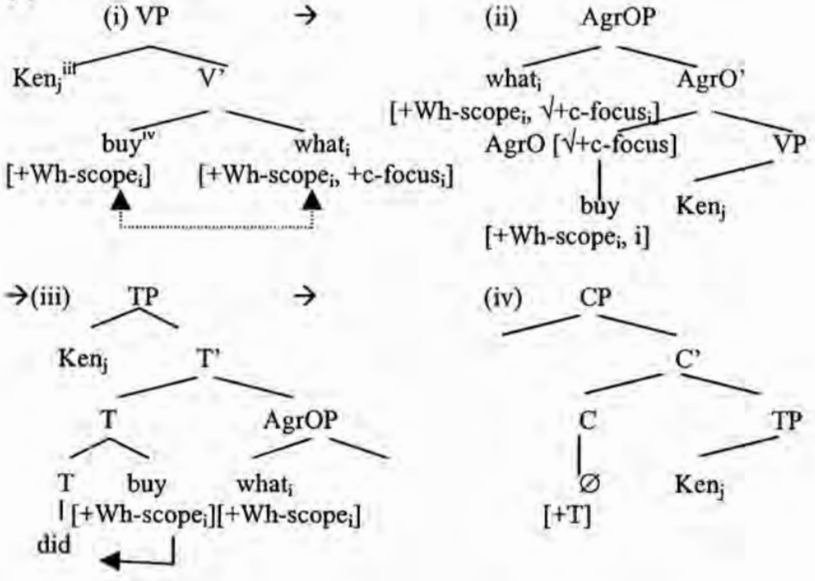
place and how it affects the derivation of LFs. There are two important points in this section. One is that [+Wh-scope], which triggers movement of wh-phrases in English, is not an inherent feature of a complementiser but that of a verb. Traditionally, a feature which induces wh-movement, e.g. [+Q] in Chomsky (1995), has been thought to be an inherent feature of a complementiser. The other important point is that some interpretable features of a verb can be handed over to higher functional categories after adjunction (which is called inheritance) and they suddenly become uninterpretable depending on their hosts and nature.

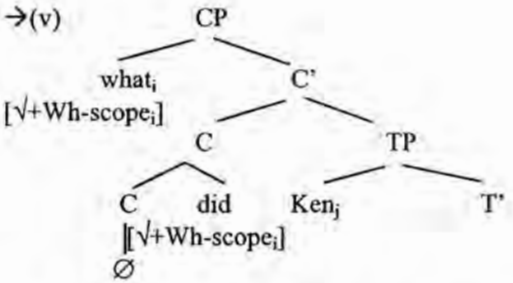
From now on, I illustrate how an English sentence is derived. Examine (1).

(1) What did Ken buy?

(1) is derived as follows:

(2)





Examine (2)(i), first. The verb, "buy" and the wh-phrase, "what" have Wh-scope features, which are normally interpretable. Following Barss (2000), I assume that quantifiers have two kinds of scope, absolute and relative scopes, and I also assume that Wh-scope features mark absolute scope for questions. To be more precise, suppose the meaning of (1) is represented as in (3).

(3) WH(x) [Ken bought x]

In (3), "WH(x)" is an operator which generates a set of things. This set fills "x" so that a set of propositions like Ken bought x_1, Ken bought x_2, .. (where x is a thing) is provided. This is the meaning of (1) according to Hamblin (1973). Now coming back to absolute scope, the bracket in (3) corresponds to the absolute scope for "what". I define this procedure as follows:

(4) When a Wh-scope feature of a verb is checked, the absolute scope for a wh-phrase is marked.[v]

"What" has another feature, [+c-focus].[vi] C-focus features are interpretable and mark the relative scope for wh-phrases. They provide a set of alternatives in the semantic component. Relative scope becomes important when there is more than one quantifier. However, since I discuss questions which has just one wh-phrase here, the relative scope is not relevant in this paper. So, c-focus features are not important either and I do not consider this feature any more here (see Morita (to appear) for details).

Come back to (i) in (2). Like theta-marking or theta-identification (see Higginbotham (1985) for these mechanisms), Wh-scope features of "buy" and "what" identify each other. As a result, [+Wh-scope] of "buy" receives the same index as that of "what" and becomes [+Wh-scope$_i$], which I call **feature identification**. In (ii), "what" is raised to spec of AgrOP for case-checking (I omit case features in a tree throughout this paper).[vii] [viii] Suppose AgrOP has a c-focus feature. Then *c-focus* of "what" is checked by the same feature of AgrOP. Here the relative scope for "what" is determined.

In (iii), the verb "buy" is adjoined to T and the Wh-scope feature which the verb has is given to the auxiliary "did" (by inheritance). In (iv), an invisible complementiser "∅" is merged with TP and it projects. I assume that "∅" has [+T]. In stage (v), "∅" attracts T. Next I assume the following condition:

(5) [+Wh-scope] with an index becomes uninterpretable in complementisers.

Because of (5), [+Wh-scope$_i$], which was handed over from "buy" to "did, became uninterpretable after "did" is raised to C. To check this uninterpretable feature, "what" must be raised to spec of CP. Then, [+Wh-scope] is checked as in (v). If (5) is correct, the distinction between being interpretable and uninterpretable is not an absolute but relative concept. In other words, whether a feature is interpretable or not depends on a host of the feature and the existence of an index. For example, [+Wh-scope] is interpretable in V, Agr, and T, but not in C if it has an index.

It is necessary to add one condition about checking of [+Wh-scope], which is as follows:

(6) [+Wh-scope$_x$], not [+Wh-scope$_{(x)}$], of complementisers can be checked by only [+Wh-scope$_x$].

(6) says that if [+Wh-scope] gets an index via feature identification, it can be checked only by a wh-phrase of the same index. This does not hold of [+Wh-scope] which receives an index by feature agreement as we see below in the case of Japanese.

It is possible to check [+Wh-scope] in (ii). However, the [+Wh-scope] of a verb at AgrOP is still interpretable, so it does not need to be checked. If the feature is checked there, semantic anomaly results, which I do not discuss here. See Morita (to appear) for details.

In the section above, I have shown how questions in English are derived syntactically with the new assumption that a feature which triggers movement of a wh-phrase is an inherent feature of a verb, not a complementiser.

2. Japanese

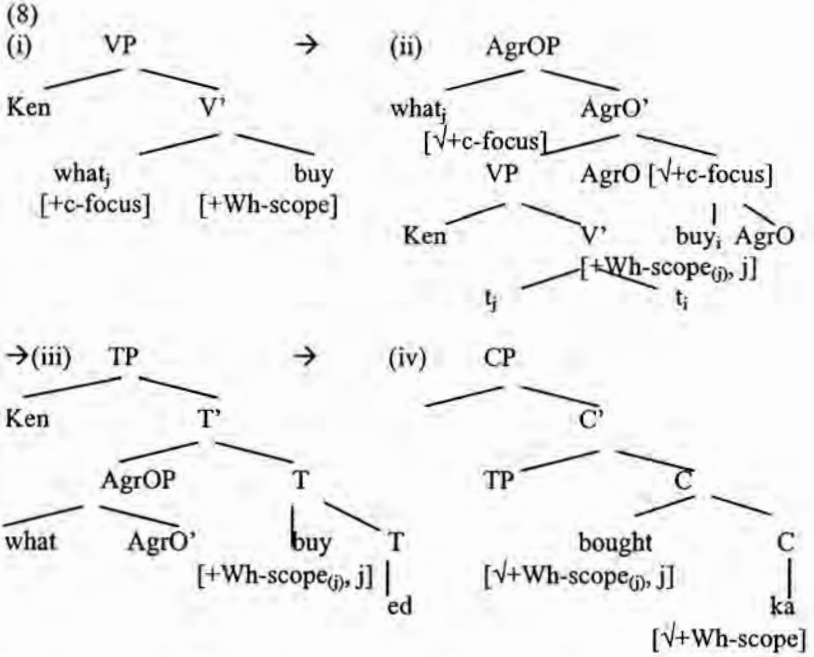
In this section, I show how a simple Japanese question is derived without any kind of wh-movement while continuing to assume that a feature which may trigger movement of a wh-phrase is an inherent feature of verbs.

Consider (7).

(7) Ken-ga nani-o kaimasita ka?
-NOM what-ACC bought Q
'(Lit.) Ken bought what?'
'What did Ken buy?'

(7) is derived as follows:

(8)



There are two differences between Japanese and English questions. First, wh-phrases in Japanese do not have Wh-scope features unlike English. Thus, in stage (i), even when 'what' is merged with 'buy', feature identification of Wh-scope features between those two lexical items does not take place because 'what' lacks [+Wh-scope]. The other difference is that Japanese has a question marker, "ka", and this marker has [+Wh-scope]. I come back to this later. In stage (ii), the verb is adjoined to AgrO and the wh-phrase 'what' is raised to spec of AgrOP for case-checking. Suppose AgrO has [+c-focus]. Then [+c-focus] of 'what' and AgrO are checked via spec-head agreement. After this, the verb and its [+Wh-scope] get the index, *j*, from "what". It is natural to assume that agreement such as number between a verb and a subject in languages like English and French is a result of checking. If so, it is not surprising that a verb receives an index from a

wh-phrase after feature checking between them takes place, which I call **feature agreement**. However, since this mechanism is different from feature identification, I represent the index of the Wh-scope feature in the verb with a round bracket. One important difference between feature identification and feature agreement is that if a Wh-scope feature receives an index from a wh-phrase through feature identification, then a Wh-scope feature with the exact index is necessary to check the Wh-scope feature. On the contrary, if the process takes place via feature agreement, such a strict identity is not necessary, so any Wh-scope feature can check the Wh-scope with the bracketed index. In stage (iii), the verb is overtly adjoined to T and 'Ken' is raised to spec of TP for case-checking. In stage (iv), I assume that the verb is overtly adjoined to C. One thing to note is that Japanese has a question marker "ka", which has [+Wh-scope]. So, [+Wh-scope$_{(j)}$] of the verb and [+Wh-scope] of "ka" are also checked at CP when the verb is adjoined to "ka". Since the Wh-scope feature of the verb has an index from feature agreement, the Wh-scope feature of "ka", which has no index, can check it though the two indexes are not exactly the same. This is how (7) is derived. Since the Wh-scope features are checked at CP, an LF like (3) will be provided. (3) is repeated below:

(3) WH(x) [Ken bought x]

If there is no wh-movement, an alternative method to mark the absolute scope for a wh-phrase is necessary. In Japanese, [+Wh-scope] of a verb receives an index from a wh-phase via feature agreement and it is checked by the question marker at CP so that the absolute scope for the wh-phrase is over the CP. This is how the absolute scope for a wh-phrase is determined without wh-movement. If this is correct, it is necessary for a verb to have [+Wh-scope] in Japanese.

Logically there are two possible configurations for English. One is when a verb has [+Wh-scope] like Japanese:

(9)

	Verb	Wh-phrase	Question Marker
English	[+Wh-scope]	[+Wh-scope], [+c-focus]	none
Japanese	[+Wh-scope]	[+c-focus]	[+Wh-scope]

The other is when a complementiser has [+Wh-scope]:

(10)

	Verb	Wh-phrase	Complementiser
English		[+Wh-scope], [+c-focus]	[+Wh-scope]
Japanese	[+Wh-scope]	[+c-focus]	[+Wh-scope]

(9) is a configuration I am proposing in this paper while (10) is prevalently assumed (e.g. Chomsky (1995)). The choice depends on whether we assume that the lexical nature of verbs is the same or whether we assume that the lexical nature of complementisers is the same between the two languages. I present three reasons for choosing (9) over (10) here. One is that Japanese overtly has a question marker, which is a complementiser as well, while English does not. Because of this explicit difference of complementisers, it is reasonable to adopt the first option, (9).

The second reason is that we can attribute the existence of wh-movement to the lexical nature of wh-phrases and the existence of a question marker. To be more precise, since Wh-scope features of the question marker and a verb check each other off, there is no wh-movement in Japanese. On the contrary, since there is no question marker and a wh-phrase has a Wh-scope feature, the wh-phrase must be raised to check a Wh-scope feature of a verb at CP in English. Like this, we can account for the existence of wh-movement quite logically.

The third reason is as follows. Suppose (10) is correct. Then the invisible complementiser in English has [+Wh-scope] and this feature attracts a wh-phrase. However, this is not allowed. I have argued that the absolute scope for a wh-phrase is marked when a Wh-scope feature of a verb is checked at CP. Thus, it is a Wh-scope feature of a verb, not that of a wh-phrase, that determines the absolute scope for a wh-phrase. If so, this implies that a Wh-scope feature of a verb needs to have an index of a wh-phrase. Otherwise, it is impossible to define the absolute scope. If this is correct, the possibility that not a verb but a complementiser has [+Wh-scope] in English is not tenable. [+Wh-scope] of a complementiser can be checked by attracting a wh-phrase. But since [+Wh-scope] of the complementiser has no index, it does not mark absolute scope for any wh-phrase. Therefore, it is necessary for a verb to have [+Wh-scope] in English like Japanese. That is to say, we should adopt (9) rather than (10).

Unfortunately, the above three reasons are not so convincing. In the case of the first reason, the fact that Japanese, but not English, has a question marker does not prove that a complementiser in Japanese has [+Wh-scope] whereas one in English does not. It may be that a complementiser has [+Wh-scope] even in English. The second reason is unpersuasive, too. We can also present a logical explanation even if we assume (10). For example, we could argue that English has wh-movement because a Wh-scope feature

of a complementiser must be checked by raising a wh-phrase, whereas Japanese does not have wh-movement because that of a complementiser can be checked by adjoining a verb to the complementiser. This is consistent with (10) and is also a logical explanation. Thus, the fact that we can provide a logical explanation under (9) does not support that (9) is correct, because (10) also can present a reasonable explanation. Finally, the third reason is based on assumptions I have made above, so it is not convincing, either. Therefore, I have not shown that (9) is superior to (10) in this section. However, an important point in this and previous sections is that it is theoretically possible to give a logical explanation even if we assume that a feature which may trigger wh-movement is an inherent feature of verbs, not complementisers. Therefore, whether (9) (my proposal) or (10) (the prevalent account) is correct depends on empirical data, which I present below.

3. Subjacency Condition

In this section I consider Subjacency Condition, which has been a long-standing problem in the literature. I claim that Subjacency Condition is attributed to the existence of Attractors, which are features that attract phrases or features. In other words, the reason why Subjacency Condition is observed under some environment is that there is no Attractors there. I explain this with an example.

Consider the following examples:

(11) * What$_i$ did John leave after Mary said t_i?
(12) ?? What$_i$ did John believe a fact that Mary said t_i?

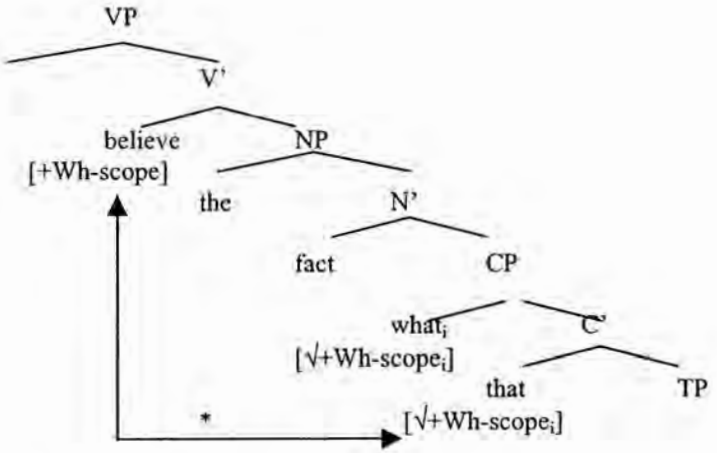
Somehow extraction out of adjunct clauses or clauses headed by NPs is prohibited as in (11) and (12), which is called Subjacency Condition.[ix] Within Government and Binding framework, Chomsky (1986) argues that a phrase cannot cross a barrier and adjunct clauses constitute barriers. This is how Subjacency is explained in the framework. However, under the Minimalist framework, which I am assuming here, it is difficult to explain Subjacency Condition. The economy principle is expected to provide a solution to the condition, but it cannot do so. This is because there is no intervening element, for example in (11), between a complementiser in the matrix clause and "what". In order to account for this problem, Chomsky (1998) has introduced the "phase". He argues that a phrase cannot be attracted from a category called *phase* which has already converged (or been sent to Spell-out) because a converged category is invisible for further computation. He claims that *a phase* is propositional and *v*P and CP are

such examples. If this is correct and "after" cannot attract a wh-phrase to its spec in (11), the adjunct clause, which is a CP, converges with the wh-phrase in it. It is impossible to attract a phrase from one which has already been converged. Therefore, it is impossible to attract the wh-phrase in (11). This is how Subjacency Condition is explained under the Minimalist framework. However, Chomsky's (1998) account has a problem in explaining (12). Suppose that the wh-phrase in (12) is attracted to spec of "that" (we know that "that" can attract a wh-phrase, which is the case in successive-cyclic movement of a wh-phrase as we see below). Once "what" is moved to spec of "that", it should have been raised to spec of the matrix CP without violating any condition. Remember that in Chomsky's account, Q features in C attract wh-phrases. Therefore, nothing should prevent "what" from being raised from the spec of "that" to the spec of the matrix CP (unless NP (or DP) is a phase, which is not the case in his account). The ungrammaticality of (12) suggests that (12) is still violating Subjacency Condition. Hence Chomsky's account cannot explain this phenomenon properly.

My proposal, in fact, does not need the speculative concept "phase" to account for Subjacency condition. I have shown that [+Wh-scope] of a verb needs to retain an index of a wh-phrase to mark the absolute scope for the wh-phrase. If so, it is possible to consider that Subjacency Condition takes place because [+Wh-scope] (with an index of a wh-phrase) of the embedded verb somehow cannot be transferred to (or copied on to) that of the matrix verb. As a result, since the matrix verb has no indexed Wh-scope feature, nothing can attract a wh-phrase. This can be implemented as follows. In (11), suppose that [+Wh-scope] is not an inherent feature of "after".[x] This implies that "after" is never able to possess a Wh-scope feature. Thus, a derivation crashes if "after" receives [+Wh-scope] from the embedded verb through feature movement. This means that feature identification does not take place between the embedded verb and a wh-phrase so that [+Wh-scope] of the matrix verb gets no index. As a result, nothing can attract the wh-phrase inside the adjunct clause in the end. This is because a complementiser in the matrix clause does not have an indexed [+Wh-scope]. Since there is no Attractor in (11), (11) violates Subjacency Condition.

Similarly, we can account for the ungrammaticality of (12). Suppose "what" is raised to spec of "that". However, still the matrix verb and "that" are too far, so feature identification of Wh-scope features between these two words cannot take place as illustrated in (13). As a result, Subjacency violation follows.

(13)



4. Successive Cyclic Movement of a Wh-phrase

The second evidence for the claim that Wh-scope features, which may trigger wh-movement, are inherent features of verbs can be shown in long-distance movement of a wh-phrase in English. Examine the following example:

(14) What$_i$ do you think t_i that Ken bought t_i?

Languages like Irish and Spanish explicitly show that a wh-phrase moves to spec of intermediate CPs until it reaches the aimed CP.[xi] I assume this is the case with English. We know that [+Wh-scope] at the final CP attracts a wh-phrase after every intermediate CP is visited by the same wh-phrase. A problem is what kind of feature attracts a wh-phrase to the intermediate CPs. I propose one possible answer here, which is to claim that the Wh-scope features of embedded verbs are such a feature.

Above I have suggested that [+Wh-scope] becomes uninterpretable when it is raised to C and has an index. Suppose an indexed Wh-scope feature of an embedded verb is raised to its immediately dominating C. Then the Wh-scope feature becomes uninterpretable at the C. To check this, a wh-phrase is raised to spec of the C ("that" in the case of (14)). If this is the case, a wh-phrase needs to be raised to every intermediate CP to check an indexed Wh-scope feature because a verb in each clause has [+Wh-scope] and this Wh-scope feature is carried up to a CP with an index. Furthermore, the wh-phrase needs to be moved to the target CP to again check [+Wh-scope], which is originated from the matrix verb. In other words, the intermediate movement is caused by [+Wh-scope] of an embedded verb and the

movement to the last CP is triggered by [+Wh-scope] of a matrix verb. This is why a wh-phrase is moved successive-cyclically.[xii]

One problem arises in this approach. Throughout this paper, I have argued that [+Wh-scope] decides the absolute scope for a wh-phrase. However, in the above case, [+Wh-scope] for one wh-phrase is checked more than once. For example, one is at the embedded CP and the other is at the matrix CP in (14). Since it is impossible for one wh-phrase to have two distinct absolute scopes, it is necessary to resolve this ambiguity. Therefore, we need a rule like 'if there are alternatives, take one which is defined at the latest.'

One important point with reference to Subjacency Condition is that in the case of argument clauses like (14), Subjacency Condition is not observed. Thus, unlike adjunct clauses like (11), it is possible to move a wh-phrase across an embedded clause. This difference is captured in my approach, too. I argue that argument complementisers like "that" can possess a Wh-scope feature. Thus, nothing prevents a Wh-scope feature of a verb from being raised into the argument complementisers. Furthermore, Wh-scope features of the argument complementisers and those of higher verbs go through feature identification. As a result, a matrix (or higher) verb gets an exact copy of an indexed Wh-scope feature from an embedded complementiser. Therefore, the Wh-scope feature of the matrix verb can attract a wh-phrase from an embedded clause. This is why Subjacency Condition is not operational in argument clauses like (14).

Successive-cyclic movement of a wh-phrase is the second piece of evidence for the argument that [+Wh-scope] is an inherent feature of verbs, not complementisers. This is because if only C in the matrix clause has a feature to attract a wh-phrase, there is no need for the wh-phrase to go to intermediate CPs. But this is not the case. To account for this problem, the prevalent view such as Chomsky (1995) needs to resort to Chomsky's (1998) "phase". He argues that a phrase cannot be attracted from a *phase* which has already converged. He assumes that (an intermediate) CP converges as soon as it is formed, so CP is a phase. However, he also assumes that a matrix verb can see not only the complementiser C but also its spec. Because of this, a wh-phrase must be somehow moved to spec of the intermediate CP for later movement (to target the higher CP).[xiii] To achieve this, he further assumes that the embedded complementiser optionally can have an EPP feature which attracts a wh-phrase. Though this explanation is compatible with my argument, it is speculative that an embedded complementiser optionally can have an EPP.

In my proposal, such a speculative account is not necessary. Only when an indexed Wh-scope feature is raised into a complementiser, a wh-phrase needs to be raised. Therefore, if a sentence is declarative like "I think Ken bought a car", it is not necessary to raise a wh-phrase to an intermediate C. This is because a Wh-scope feature without index is interpretable in complementisers, hence, it does not be checked. However, in the case of

Chomsky (1998), since an EPP feature of complementisers is optional, there can be a derivation which requires a wh-phrase to move to an intermediate CP, which leads to crash because of no wh-phrase. In my account, simply this kind of derivation never takes place. So, my account is a more economical mechanism than Chomsky's (1998).

Above I have shown two pieces of evidence for the claim that a feature which may trigger wh-movement is an inherent feature of verbs, not of complementisers. The discussions of English and Japanese questions have shown that it is theoretically possible to explain questions in the two languages even if we make the above claim. Thus, whether my claim or the prevalent view such as Chomsky (1995) is correct depends on empirical data. Accordingly, I have presented a few pieces of evidence for my claim. Two pieces of evidence are found in Subjacency Condition and successive-cyclic movement of a wh-phrase. I have claimed that Subjacency Condition takes place when a matrix (or higher) verb fails to get an indexed Wh-scope feature from an embedded clause through feature identification. If this account is correct, we do not need to assume Chomsky's (1998) "phase" to explain the two phenomena (though the notion "phase" is compatible with my account). In the case of successive-cyclic movement, the prevalent view like Chomsky (1995) has failed to answer what kind of feature attracts a wh-phrase to intermediate CPs in a reasonable way. Chomsky (1998) resolves this problem by introducing "phase" and assuming that complementisers can optionally have an EPP feature. I am not sure if this move is justified due to the speculative nature of his account. However, the successive-cyclic movement of a wh-phrase is not a problem under my account. I have argued that a wh-phrase needs to drop in at intermediate complementisers to check a Wh-scope feature, which is originally from a verb. Like this, my account has clearly shown what kind of feature attracts a wh-phrase to intermediate clauses. There is no need to assume "phase" or an optional EPP feature of complementisers here.

Since the two phenomena, Subjacency Condition and successive-cyclic movement of a wh-phrase are accounted for more naturally under my account than the prevailing view like Chomsky (1995, 1998), my claim, which is theoretically plausible, is more favourable.

Notes

I thank participants of WECOL 2000 for giving me useful comments and insight. I also thank Jesus College, Oxford, for helping me to attend the conference financially.

[i] What I have meant by "inherent features" is either (i) "intrinsic" features or (ii) "optional" features which can be inserted before a lexical items is sent to a numeration like a ϕ-feature of a verb (or a tense). See Chomsky (1995) for details.

[ii] As we see below, [+Wh-scope] can be an inherent feature of some complementiser in Japanese and in English. But an important point here is that a feature which may trigger wh-movement is an inherent feature of verbs, not complementisers.

[iii] In this paper, I assume VP-Internal Subject Hypothesis (see Kuroda (1988) for example).

[iv] Word order in a tree is not relevant here. This is the case throughout the present paper.

[v] As Tomoyuki Yoshida (p.c.) points out, one might think it strange that the absolute scope for wh-phrases are not fixed at the beginning but are decided later during derivations. Certainly it is strange if the absolute scope for wh-phrases are changing during derivations. However, I assume that the absolute scope is defined when Wh-scope features are checked. Thus, the movement of [+Wh-scope] via verbs does not mean that the absolute scope is changing. Furthermore, the semantic component sees a representation (an LF) when a derivation reaches Spell-out and it does not care how the representation is created. Therefore, the movement of [+Wh-scope] is nothing strange or confusing for the semantic component because the component watches the last point of derivation only.

[vi] Shima (1999) independently claims that two features are necessary in wh-question constructions. However there are two differences between his account and mine. The first difference is that he assumes that an inherent feature of C attracts a wh-phrase like Chomsky (1995, 1998). The second difference is that Shima (1999) resorts to "unselective binding" (Heim (1982)) to derive semantics of Japanese wh-phrases, that is, wh-phrases in situ. On the contrary, I show below that appropriate semantics is available without using "unselective binding" while maintaining "compositionality". Furthermore, there are a few theoretical and empirical problems with the "unselective binding" account. See Morita (to appear) for details.

[vii] Here, I assume that a case feature, which is uninterpretable, attracts a DP. However, Chomsky (1998) argues that case features cannot attract DPs. Nevertheless, I follow Chomsky (1995) in that a case feature attracts a DP in this paper and this choice does not affect my argument.

[viii] In this paper, I use TP and AgrOP for the places where nominative and accusative case features are checked respectively. In fact, it does not make any difference even if one employs Chomsky's (1995) *v*P for checking accusative cases, as long as the checking position for accusative is lower than the one for nominative.

[ix] Prohibition of extracting a phrase out of adjuncts or complex NPs are thought not to be all instances of Subjacency condition. For example, wh-islands are supposed to be included Subjacency. However, due to the limited space, I assume that extractions out of adjuncts or complex NPs are only instances of Subjacency Condition in this paper.

[x] Here I assume that there are three kinds of lexical items with respect to the possession of [+Wh-scope]. The first kind is such that it has [+Wh-scope] inherently like a verb. The second is such that it does not have [+Wh-scope] inherently, but it still can inherit [+Wh-scope]. The third is such that it can never have [+Wh-scope] under any circumstance. "After" belongs to the third kind.

[xi] In Irish, a complementiser changes its form when a wh-phrase passes through it (see McCloskey (1979) for details). In Spanish, verb-preposing takes place in the same situation (see Torrego (1984) for details).

[xii] In the case of Japanese, no successive-cyclic movement of a wh-phrase should be allowed because Japanese wh-phrases cannot have [+Wh-scope]. Then a problem arises because I have argued that a Wh-scope feature with an index becomes uninterpretable in C. In other words, if a verb with an indexed Wh-scope feature is raised to C in Japanese, something other than a wh-phrase must check the Wh-scope feature. There are two ways to resolve this problem. One is to assume that "to", which corresponds to "that", can optionally have a Wh-scope feature and let the feature percolate up to the embedded CP. If so, the indexed Wh-scope feature of the verb is automatically checked when it is raised to the embedded C. The other way is to suppose that Wh-scope features whose indexes are acquired through feature agreement (not feature identification) remain interpretable in C. I am not sure which is the case. I leave this open.

[xiii] See Terada (1999) for problems with this assumption.

References

Barss, Andrew. 2000. "Minimalism and Asymmetric *wh*-Interpretation," in R. Martin, D. Michaels, and J. Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. Cambridge, Massachusetts: The MIT Press, 31-52.

Chomsky, Noam. 1986. *Barriers*. Cambridge, Massachusetts: The MIT Press.

Chomsky, Noam. 1995. "Categories and transformations," *The Minimalist Program*. Cambridge, Massachusetts: The MIT Press, 219-394.

Chomsky, Noam. 1998. "Minimalist Inquiries: the Framework," *MIT Occasional Papers in Linguistics*, **15**. Reprinted in R. Martin, D. Michaels, and J. Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. Cambridge, Massachusetts: The MIT Press, 2000, 89-155.

Hamblin, Charles Leonard. 1973. "Questions in Montague English," *Foundations of Language*, **10**. 41-53.

Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*, doctoral dissertation, University of Massachusetts.

Higginbotham, James. 1985. "On Semantics," *Linguistic Inquiry*, **16**. 547-593.

Higginbotham, James and Robert May. 1981. "Questions, quantifiers and crossing," *The Linguistic Review*, **1**. 41-80.

Kuroda, Shige-Yuki. 1988. "Whether we Agree or not: a comparative syntax of English and Japanese," in W. Poser (ed.), *Papers from the Second International Workshop on Japanese Syntax*. Stanford University: CSLI, 103-143.

McCloskey, James. 1979. *Transformational syntax and model theoretic semantics*. Dordrecht: Reidel.

Morita, Hisashi. to appear. *English and Japanese Questions*. D.Phil thesis, the University of Oxford.

Reinhart, Tanya. 1998. "Wh-in-situ in the framework of the Minimalist Program," *Natural Language Semantics*, **6**, 29-56.

Shima, Etsuro. 1999. "Two types of wh-phrases," *Lingua*, **107**, 159-206.

Terada, Hiroshi. 1999. "Successive Cyclicity and Incrementality," *English Linguistics*, **16**. 243-274.

Torrego, Esther. 1984. "On Inversion in Spanish and Some of Its Effect," *Linguistic Inquiry*, **15**. 103-129.

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Interaction of Scrambling and Prosody in Japanese

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Scrambling (of various constituents in a sentence) in languages such as Japanese is problematic for the configurational analysis of these languages and has been investigated extensively. There are basically two different configurational approaches to the problem of scrambling. The main difference between them lies in the treatment of optionality: whether scrambling can be best viewed as a result of an optional movement (Saito 1985, Saito and Fukui 1998) or it is analyzed as being obligatory in the sense that it is licensed only in certain syntactic configurations (Miyagawa 1997). Specifically, in Miyagawa (1997) the obligatoriness of scrambling derives from base-generation, by case congeniality in case of A-movement scrambling, and by focus in case of A'-movement scrambling to focus positions. The objective of this paper is to show that the focus phenomena associated with scrambling can be better explained prosodically, rather than by positing syntactic focus positions, thereby weakening Miyagawa's contention that scrambling is necessarily obligatory (syntactically).

In the sections that follow, I discuss 1) the scrambling-as-obligatory analysis of Miyagawa (1997), 2) the prosodic focus marking system in Japanese, and 3) how the prosodic analysis better account for the focus phenomena associated with scrambling than Miyagawa's syntactic solution to it.

1 Scrambling in Japanese

Miyagawa (1997) classifies scrambled sentences in Japanese into the following three types:

(1) Base-generated scrambling
Naoko-ga [$_{vp}$tomodachi-ni tegami-o watashita]
N-nom friend-dat letter-acc handed
Naoko-ga [$_{vp}$tegami-o tomodachi-ni watashita]
'Naoko handed a letter to her friend'

(2) A-movement scrambling = case-driven
Te-o [$_{ip}$Yamaguchi-ga hoteru-gyoo-ni *t* nobashita]
hand-acc Y-nom hotel-business-to extended
'Yamaguchi became involved in the hotel business'

(3) A'-movement scrambling = driven to focus position
?? Naoko-ga [$_{vp}$isoide Yamaguchi-ni tegami-wa watashita]
N-nom quickly Y-dat letter-contrast handed
Naoko-ga tegami-wa [$_{vp}$isoide Yamaguchi-ni *t* watashita]
Tegami-wa Naoko-ga [$_{vp}$isoide Yamaguchi-ni *t* watashita]
'Naoko quickly handed the letter to Yamaguchi'

Shown in (1) are sentences with different, base-generated orders of the indirect and direct NP's; hence, there is no optionality of movement in the sense of Saito (1985). In (2) a part of the idiomatic expression *te-o nobasu* 'become involved' is scrambled to the beginning of the sentence, which Miyagawa argues to be an A-position. What matters here is the distinction between A- and A'-movements in terms of the syntactic distinction between nonfocus and focus positions, respectively. Specifically, in (3) the object NP marked with the topic/contrast particle *-wa,* must move to a pre-VP or sentence-initial position, to be acceptable. And these positions, to which contrastive constituents must move to, are claimed to be syntactic focus positions.

The questions to ask about Miyagawa's analysis are: 1) Is A/A' distinction coextensive with nonfocus/focus distinction? and 2) Is it necessary to posit syntactic focus positions with no syntactic evidence other than cases like (3)? My answers to these questions are both negative. To justify that, I will first discuss how focus is marked prosodically in Japanese, in the next section.

2 Prosodic Focus Marking in Japanese

There are many ways to mark focused constituents in different languages. There are, of course, syntactic means for focus marking such as the cleft sentence *It is Jóhnny who did it* in English. More commonly used are such prosodic means as stress and pitch accent placement (e.g. English), prosodic phrasing (e.g. Japanese), or both (Ladd 1996). Japanese has been known to make use of prosodic phrasing for focus marking purposes (Pierrehumbert and Beckman 1988, Nagahara 1994). The following paradigm illustrates how prosodic focus phrasing works in Japanese (Nagahara 1994):

(4)

Syntactic structure

[$_{np}$Náoko-wá] [$_{avp}$nichiyóobi] [$_{pp}$Nágoya-dé] [$_{np}$Mári-ní] [$_{v}$átta]
Naoko-topic Sunday Nagoya-at Mari-with met

Normal intermediate phrasing

[$_i$Náoko-wá] [$_i$nichiyóobi] [$_i$Nágoya-dé] [$_i$Mári-ní átta]
'Naoko met with Mari in Nagoya (last) Sunday'

Focus phrasing

[$_i$Náoko-wá] [$_i$nichiyóobi] [$_i$Nágoya-dé] [$_i$Mári-ní] [$_i$*átta*]
'Naoko *met* with Mari in Nagoya (last) Sunday'

[$_i$Náoko-wá] [$_i$nichiyóobi] [$_i$Nágoya-dé] [$_i$Mári] [$_i$*ní* átta]
'Naoko met *with* Mari in Nagoya (last) Sunday'

[$_i$Náoko-wá] [$_i$nichiyóobi] [$_i$Nágoya] [$_i$*dé* Mári-ní átta]
'Naoko met with Mari *in* Nagoya (last) Sunday'

[$_i$Náoko-wá] [inichiyóobi] [$_i$*Nágoya*-dé Mári-ní átta]
'Naoko met with Mari in *Nagoya* (last) Sunday'

[$_i$Náoko-wá] [$_i$*nichiyóobi* Nágoya-dé Mári-ní átta]
'Naoko met with Mari in Nagoya (last) *Sunday*'

[$_i$Náoko] [$_i$*wá* nichiyóobi Nágoya-dé Mári-ní átta]
'*Naoko* met with Mari in Nagoya (last) Sunday'

[$_i$*Náoko*-wá nichiyóobi Nágoya-dé Mári-ní átta]
'*Naoko* met with Mari in Nagoya (last) Sunday'

The intermediate phrase, indicated by [$_i$, serves as the domain of tone-downstepping. In focus phrasing, the focused constituent must be the leftmost one within the rightmost intermediate phrase. As these phrasing patterns show, the constituent followed by the particle *-wa* is not inherently contrastive; its contrastiveness derives from its being part of a focus phrasing pattern. In this respect, we cannot argue for the existence of syntactic focus positions, based crucially on the assumption that the particle *-wa* is inherently contrastive.

3 Scrambling and Prosodic Focus Phrasing

One of the questions posed at the beginning of this paper was whether or not A/A' distinction is coextensive with nonfocus/focus distinction in scrambled sentences in (2) and (3). My answer is negative, on the basis of the following two arguments.

The first argument is that even base-generated and A-scrambled sentences in (1) and (2) can be focus-marked by prosodic phrasing exactly as prescribed in (4). Although the context in which a sentence is used determines which constituent in a sentence is to be focused, the way focused constituents are

marked phonologically is automatic, and applies to any sentence whether it is based-generated or not:

(5) Base-generated scrambling
Naoko-ga [$_{VP}$tegami-o tomodachi-ni watashita]
N-nom letter-acc friend-dat handed
[$_i$Naoko-ga] [$_i$tegami-o] [$_i$tomodachi-ni watashita]
'Naoko handed the a letter to her friend'
[$_i$Naoko-ga] [$_i$*tegami-o* tomodachi-ni watashita]
'Naoko handed the *a letter* to her friend'

In (5) the object NP *tegami-o* does not have to be focused (as in the first i-phrasing pattern) but can be focused (as in the second i-phrasing pattern). If focus marking involves syntactic positions as claimed by Miyagawa, then it would be very difficult to explain why the same object is focused in one case and not so in the other, when there is no syntactic difference (on the surface).

The following is an example of Miyagawa's A-movement scrambling:

(6) A-movement scrambling
Te-o [$_{IP}$Yamaguchi-ga hoteru-gyoo-ni *t* nobashita]
hand-acc Y-nom hotel-business-to extended
[$_i$Te-o] [$_i$Yamaguchi-ga] [$_i$hoteru-gyoo-ni *t* nobashita]
'Yamaguchi became involved in the hotel business'
[$_i$*Te-o* Yamaguchi-ga hoteru-gyoo-ni *t* nobashita]
'Yamaguchi *became involved* in the hotel business'

As this example shows, a part of the idiomatic expression *te-o nobasu* 'become involved' can be focused but does not have to be, depending on how the whole sentence is i-phrased. In the first i-phrasing pattern, it is not focused prosodically, and it is in the second pattern, showing that prosodic focus marking works independently of the syntactic structure involved, and identically to the i-phrasing patterns in (5).

The second argument (to show the independence of focus marking from syntactic structures) is concerned with the claim that a constituent marked by the contrastive particle *-wa* in the A'-scrambling case in (3) is forced to a focus position preceding the VP or the sentence-initial position. This claim, however, does not explain the following focus patterns, in which the same constituent marked by *-wa* can be focused or does not have to be, depending on different i-phrasing patterns:

(7) Scrambling of *wa*-phrases
Naoko-ga tegami-wa [$_{VP}$isoide Yamaguchi-ni t watashita]

N-nom letter-topic quickly Y-dat handed
[$_i$Naoko-ga] [$_i$tegami-wa] [$_i$isoide] [$_i$Yamaguchi-ni *t* watashita]
'Naoko quickly handed the letter to Yamaguchi'
[$_i$Naoko-ga] [$_i$*tegami-wa* isoide Yamaguchi-ni *t* watashita]
'Naoko quickly handed *the letter* to Yamaguchi'

(8)

Tegami-wa Naoko-ga [$_{vp}$isoide Yamaguchi-ni *t* watashita]
letter-topic N-nom quickly Y-dat handed
[$_i$Tegami-wa] [$_i$Naoko-ga] [$_i$isoide] [$_i$Yamaguchi-ni *t* watashita]
'Naoko quickly handed the letter to Yamaguchi'
[$_i$*Tegami-wa* Naoko-ga isoide Yamaguchi-ni *t* watashita]
'Naoko quickly handed *the letter* to Yamaguchi'

Here, the *wa*-phrases in the first i-phrsing patterns in (7) and (8) are not contrastive, but a part of the given information; that is, the particle *-wa* is just a topic marker. In contrast, the same *wa*-phrases can be focused contrastively as in the second i-phrasing patterns in (7) and (8). The two i-phrasing patterns in (7) and (8) clearly show that 1) the particle *-wa* is not inherently contrastive; rather its contrastiveness derives from the fact that it is used contrastively prosodically, which argues against the claim that the particle *-wa* (as a contrastive marker) is the reason why its host constituent moves to a syntactic focus position, and 2) there is no reason to believe that the position preceding the VP or the sentence-initial position is syntactically a focus position, because the examples (5) through (8) all show that it is the focus i-phrasing (and not their syntactic structures) that determines whether a particular constituent is focused or not.

My analysis is further supported by the following examples, in which there is no *-wa* particle involved, but the emerging focus patterns are identical to the ones in (7) and (8):

(9)

Naoko-ga tegami-o [$_{vp}$isoide Yamaguchi-ni *t* watashita]
N-nom letter-acc quickly Y-dat handed
[$_i$Naoko-ga] [$_i$tegami-o] [$_i$isoide] [$_i$Yamaguchi-ni *t* watashita]
'Naoko quickly handed a letter to Yamaguchi'
[$_i$Naoko-ga] [$_i$*tegami-o* isoide Yamaguchi-ni *t* watashita]
'Naoko quickly handed *a letter* to Yamaguchi'

(10)

Tegami-o Naoko-ga [$_{vp}$isoide Yamaguchi-ni *t* watashita]
letter-acc N-nom quickly Y-dat handed
[$_i$Tegami-o] [$_i$Naoko-ga] [$_i$isoide] [$_i$Yamaguchi-ni *t* watashita]
'Naoko quickly handed a letter to Yamaguchi'
[$_i$*Tegami-o* Naoko-ga isoide Yamaguchi-ni *t* watashita]

'Naoko quickly handed *a letter* to Yamaguchi'

These examples show the identical focus/nonfocus patterns as those in (7) and (8), but here, the catch is that no particle *-wa* is involved.

These two arguments show that the explanation of A'-scrambling in terms of the contrastiveness of the particle *-wa* and syntactic focus positions does not account for the fact that the focusing patterns in (5) through (10) are identical and can be accounted for simply by focus i-phrasing in (4). This does not mean, of course, that the analysis into three types of scrambling in (1) through (3) based on syntactic grounds is invalid. Rather, my arguments show that A'-scrambling has nothing to do with focus, thereby weakening the contention that scrambling is necessarily obligatory (syntactically).

My analysis is also in accord with the general tendency that syntactic and prosodic focus marking function independently, but they tend to complement each other. For example, in the cleft sentence *It is Jóhnny who gave the book to me* (which is a syntactic means to mark a focused constituent), the main sentential stress on *Jóhnny* and its associated pitch-accent indicate that it is *Jóhnny* that is focused. Here, the syntactic and prosodic means complement each other; but the two are independent of each other, nonetheless, as shown by the same sentence with its main stress and pitch accent on a different word: in *It is Jòhnny who gave the bóok to me*, it is the phrase *gave the bóok to me* that is focused.

Finally, there is something I have to explain, regarding the example (3), a part of which is repeated below:

(3) A'-movement = driven to focus position
?? Naoko-ga [$_{vp}$isoide Yamaguchi-ni tegami-wa watashita]
N-nom quickly Y-dat letter-contrast handed
Naoko-ga tegami-wa [$_{vp}$isoide Yamaguchi-ni *t* watashita]
'Naoko quickly handed the letter to Yamaguchi'

The very reason for positing syntactic focus positions in Miyagawa's analysis is the contrast between the first and the second sentences in (3). Does this not show that the contrastive phrase *tegami-wa* is forced to a focused position? My answer to this is as follows. It is not the case that the phrase *tegami-wa* in (3) is focus-driven to a syntactic focus position, since the same phrase in the second sentence in (3) can be focused but does not have to be, as shown in (7). So, there must be a different reason for that, independent of focus factors, why the first sentence in (3) is unacceptable; therefore, my analysis still stands regardless of what that reason is.

4 Conclusion

Regardless of whether the analysis of scrambling in Japanese into three types in (1) through (3) can be justified syntactically, my arguments still hold that prosodic phrasing is the main focus marking mechanism in Japanese, which operates independently of whatever syntactic means to achieve focus marking. If the relation between the syntactic cleft construction and prosodic focus marking in English is of any indication of universality, we would expect that if there were any syntactic focus marking construction in Japanese, it would most likely be something that complements (not supplants) prosodic focus marking.

References

Ladd, D. 1996. *Intonational Phonology.* Cambridge, UK: Cambridge University Press.

Miyagawa, Shigeru. 1997. "Against Optional Scrambling", *Linguistic Inquiry,* **28**. 1–26.

Nagahara, Hiroyuki. 1994. *Phonological Phrasing in Japanese.* UCLA dissertation.

Pierrehumbert, Janet and Mary Beckman. 1988. *Japanese Tone Structure.* Cambridge, Massachusetts: MIT Press.

Saito, Mamoru. 1985. *Some Asymmetries in Japanese and Their Theoretical Implications.* MIT dissertation.

Saito, Mamoru and Naoki Fukui. 1998. "Order in Phrase Structure and Movement", *Linguistic Inquiry,* **29**. 439–474.

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Actively Discussing the World: Hedging in Conversational Interaction in Japanese

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1. Introduction

The Japanese has a rich repertoire of *hedges*, devices that modify the illocutionary force of statements by softening them. The Japanese are concerned with modify this force because their culture encourages them not to state opinions directly. Rather, they are encouraged to talk around a topic and avoid making any evaluation of the truth of an utterance that might imply their responsibility for that utterance. They do this in part to avoid giving offense and because they believe that listeners should be sensitive enough to what a speaker is saying to be able to discover the speaker's point – even when hedged – from the contextual clues a speaker carefully provides a listener.

"Language without hedging is language without life," according to Skelton (1988, p. 38), and with its hedging system, the Japanese language is rendered more flexible and the world more subtle. In fact, it is impossible to avoid hedging while describing or discussing the world in Japanese. Thus, hedges are crucial tool in Japanese.

Nevertheless, to date, little research has been conducted on Japanese hedges so that there are no units or processes defined by prior analysis, no discussion of the relationship between hedging and the building of social relationships. Thus, through the analysis of spontaneous naturalistic discourse (i.e., longer stretches of discourse) in Japanese, the present study aims to discuss the importance, forms, and functions of the hedges which Japanese people employ.

2. Background

The theoretical importance of hedging was first identified by George Lakoff (1972), who spoke of "words whose job [it] is to make things fuzzier or less fuzzy" (p.195). However, the term is used less technically by Robin Lakoff (1974) with a meaning much closer to "conventional usage" (p.25). She describes hedges as those lexical constructions which reduce or attenuate the force of a speech act. It is in this sense that the term is used by most speech style researchers

(e.g., Wright & Hosman, 1983) who focus, on the one hand, on features of "women's language" or "powerless" speech, and men's speech, on the other. Inspired by Robin Lakoff's (1973,1975) work during the past two decades, a number of researchers (e.g., Bradac & Mulac, 1984; Bradac et. al., 1995; Bradley, 1981; Erikson et al., 1978; Hosman, 1989, Hosman & Siltanen, 1994; O'Barr, 1982; O'Barr & Atkins, 1980; Prince et al., 1982) who have examined the effects of speech style argue that hedges are powerless and deferential linguistic forms.

Robin Lakoff claims that hedged speech is perceived as less assertive than non-hedged speech, other studies (e.g., Hosman & Wright, 1987; Wright & Hosman, 1983) also find that the absence of hedges produces more positive evaluations of authoritativeness than does the presence of hedges. And these studies often inject a normative dimension to the discussion, implying that people, especially females, should avoid using hedges.

There is, however, no agreement about which forms should be included as instances of hedges and which should not (Clemen, 1997). Indeed, there is really no explicit discussion of the criteria by which the investigators select the forms they regard as hedges. Lakoff (1975), for example, identifies as hedges the terms, "'well,' 'y'know,' 'kinda,' and so forth: words that convey the sense that the speaker is uncertain about what he (or she) is saying, or cannot vouch for the accuracy of the statement" (p. 53).

Some researchers treat Robin Lakoff's list of examples as perfect. Others expand it to the extent that they include forms such as *I think, if, perhaps* and *maybe*, and paralinguistic features such as hesitation signals and disfluencies (e.g., Hosman & Wright, 1987). Thus, in the research conducted to date, there is little explicit discussion of how to define a hedge and of the criteria to be used in determining what forms constitute hedges in any particular domain. Moreover, no research has examined hedges in the context of extended discourse, involving complex and dynamic interactions.

3. Research Questions

The present study intends to examine the way hedging is typically expressed in Japanese at the discourse level in particular domains or particular contexts where hedges operate. The study addresses the following research questions derived from the work reviewed:

(1) What discourse-based hedges exist in Japanese?
(2) What situations/settings encourage the use of hedges in Japanese?
(3) Does the interlocutor's gender affect hedging behavior?
(4) Does hedging behavior affect listener response?

4. Method

4.1. Subjects

In order to overcome the potential bias of a single researcher and to permit the collection of a large corpus of data from a more comprehensive array of context, six native speakers of Japanese (three men and three women) living in Japan have

been carefully chosen, considering the gender, profession, social status, and age of each (see Appendix A for a summery of their descriptions).

4.2. Settings/contexts

Several researchers working with English (e.g., Baumann, 1979; Brown, 1980) have furnished evidence that hedging devices occur most frequently in high solidarity, relaxed, informal contexts. They have suggested that the most "hedge-rich" situations are those where participants are engaged in discussion – expressing their personal opinions and evaluations on contentious or speculative topics. Furthermore, Holmes (1984a) has shown that certain types of hedges (e.g., *you know* and *sort of*) are used repeatedly in informal contexts while the hedge *I think* tends to occur more frequently in formal contexts.

Therefore, taking such contextual and social distance factors into account, two different social settings have been selected for analysis:

(1) Individuals interacting with professional colleagues in the workplace – a public, formal setting, and
(2) Individuals interacting with close friends in a bar or coffee shop – a private, informal setting.

4.3. Data collection procedures

The data on the spontaneous speech of the six participants were collected between July 1998 and August 1999. At least two conversations were recorded in each setting – public/formal and private/informal – with the same interlocutor(s) or different interlocutor(s). There were an interval of a few days between the first one and second conversations so that the interlocutors would have the opportunity to speak on a broader range of topics. Each conversation lasted a minimum of one hour, leading to about four hours of tape-recorded conversation per person.

The six participants filled out background and contextual information sheets immediately after each conversation. In order to elicit fuller information on the interactions, a personal, face-to-face interview about each interaction was conducted with each main participant as well as with their interlocutors (see Appendixes B and C for some samples of interview questions). This study will focus on both the speaker's and the listener's perceptions about discourse-based hedges. It will examine what speaker's intensions and expectations are, as well as how the listener's responses affect the course of interaction.

5. The Criteria for Discourse-based Hedges in Japanese

5.1. A working definition

To lay the ground work for analysis, I would like to suggest the following working definition for hedges as they are found in the Japanese language. This definition is discourse-based and, although it differs from other definitions of hedges, is rooted in several seminal works (e.g., Hewitt & Stokes, 1975; Holmes, 1982, 1984a, 1984b, 1984c, 1995; Hyland, 1994, 1996a, 1996b, 1998, 2000):

> A *discourse-based hedge* is minimally a clause consisting of one set of subject-verb elements that modifies the pragmatic force of a proposition. It modifies the pragmatic force of the clause that follows it (where it functions prospectively) or the clause that precedes it (where it functions retrospectively).

It is quite common for a discourse-based hedge to function retrospectively, since the grammatical elements (e.g., modal auxiliaries, negation, tense, etc.) which signal hedging are placed in the final position in a sentence in Japanese. The following two examples in the next section that are excerpted from my data illustrate this notion.

5.2. Examples of discourse-based hedges

Example I: Prospective Hedge (Paying and Receiving Compliments)

Situation – a public/formal setting
Hide, the chief of a police department, uses a discourse-based hedge before paying a compliment to the officer under him. In addition, we find that the officer also employs a discourse-based hedge before accepting his boss' compliment. (The underlined potions below are discourse-based hedges.)

Hide: *Konna koto iu no mo nan dakedo, kono hookokusho yoku dekiteru ja nai.*

(You might already know this, but this report is well written.)

Officer: *So, soo desho! Kachoo. Jibunde iu no mo nanda kedo, kekkoo yoku kaketeru desho? Demo kanari jikan kakatta n su yo.*

(Oh! Do you think so, Chief? Although I shouldn't say this, (I accept) this report is written relatively well. But I spent quite a lot of time on this, you know.)

Example II: Retrospective Hedge (Stating an Opinion)

Situation –an informal/private setting
The speaker, Chiho, employs a discourse-based hedge right after stating her opinion about the number of "sumo" wrestler champions in Japan.

Friend: *Are wa nan nin made ii no? Soo iu mondai ja nai no?*

(How many sumo champions can the Sumo Wrestling Association have? Isn't it a point they care about?)

Chiho: *Aa, demo, anmari fuyasanai yooni suru n ja nai. Datte, annmari fuesugi chattara nee, nan-nan-too toka tsukuru wakeni ikanai mon ne.*

(I think they try not to have too many. Because even if they increased the number of champions, they couldn't create a new team like the South-South East team.)

Friend: *Soo kaa.*

(I see.)

Chiho: *Kita minami igai nimo, yoku wakaranai kedomo*...

(Besides the present teams, North and South, although I'm not very sure...)

6. Findings and Discussion

All 24 hours of tape-recorded data were subjected to quantitative and qualitative analyses and there were five significant findings:

6.1. Prospective hedges outnumber retrospective hedges.

Whereas I had originally assumed that retrospective hedges (i.e., hedges which are placed after a proposition) would outnumber prospective (i.e., hedges which are placed before a proposition) because grammatical elements are placed in a sentence final position in Japanese and a Japanese speaker's real intentions tend to gradually appear towards or at the end of an utterance. However, contrary to my expectations, all six subjects used more prospective than retrospective hedges, both in formal and informal settings. Sixty-six per cent of the total hedges were prospective while only 34% of the total hedges were retrospective (see Table 1).

Table 1

Distribution of Prospective vs. Retrospective

		No. of Prospective		No. of Retrospective	
Subject	Gender	Formal	Informal	Formal	Informal
Hide	M	8 (7	1)	4 (3	1)
Kazu	M	9 (8	1)	4 (3	1)
Taka	M	9 (8	1)	4 (4	0)
Chiho	F	15 (10	5)	11 (7	4)
Shoko	F	12 (8	4)	2 (2	0)
Rie	F	11 (6	5)	8 (5	3)
Total		64 (47	17)	33 (24	9)
		66%		34%	

After conducting personal interviews with my subjects, I found that the most critical function of Japanese hedging is that of defining the future in the present. Put another way, speakers use hedges to try to influence how future events will be defined. Hedges are used to create possible interpretations for potentially problematic events, hoping to shape them as either unproblematic or at least less problematic, should they occur. That is to say, Japanese people employ hedges as a prudent "insurance" (Hewitt & Stokes, 1975, p. 4) against forthcoming conduct.

6.2. "I'm not very sure, but": the most frequent discourse-based hedge

Table 2

Distribution of Types of Hedges

	Formal	Informal	Total
Yoku wakaranain desu kedo/dakedo	30	9	39 (40%)
Other	41	17	58 (60%)
Total	71	26	97 (100%)

Table 2 shows that the hedge which my subjects used most frequently (40% of all hedges in both settings – formal and informal) was of the "I'm not sure but" (*yoku wakaranain desu kedo/dakedo*) type. For example, "I'm not very sure how many sumo champions the Japan Sumo Wrestling Association has, but they have at most four " or "I'm not very sure, but I don't like my boss who is moody" or "I am eager to eat rice and curry, although I'm not very sure." This "I'm not very sure, but"-type hedge occurred even when my subjects were very sure of something, as in the case of my female subject when she said "I'm not very sure, but" about hating her boss, even though she *was* very sure that she really hated him, or when my male subject said "I'm not very sure, but" about what he wants to eat.

So, why did they use hedges?

First, this type of hedge is "an intentional signal of minimal commitment to the impending line of conduct, an indication of a willingness to receive discrepant information" (Hewitt & Stokes, 1975, p. 4) as shown in the example of the number of Sumo champions. Second, this type of hedge is recognized as one realization of a positive conflict avoidance strategy. As my data clearly show, "I'm not very sure, but"-type hedges frequently appear in those situations in which my subjects wished to preface their statements of opinion or positions in arguments – in other words, before their expressions of belief or preference.

In Japan, expressing personal opinions and evaluations on speculative topics, i.e., plain speaking, has one overwhelming drawback: it tends to commit the speaker to a "hard-and-fast" position and, thus, can easily provoke direct confrontation between interlocutors – which Japanese dread (Christopher, 1983, p. 43). "For the Japanese" as Barnlund (1975) remarks, "conversation is a way of creating and reinforcing the emotional ties that bind people together. Interpersonal attitudes are its content. Intuition is its mode. Social harmony is its aim" (p.129). Confrontation, because it threatens to destroy rather than reinforce emotional ties, is avoided. Thus, the Japanese are willing to sacrifice a candid exchange of opinions in order to be able to reinforce the emotional ties that bind. Such reinforcement requires the use of hedges.

6.3. Hedges used in formal settings outnumber those used in informal settings

Whereas previous research on English (e.g., Homes, 1984a) has noted that hedges used in informal settings outnumber those used in formal settings, the contextual

distribution of the hedges that my six subjects employed shows the reverse to be true (see Table 3). Of the 97 discourse-based hedges employed in my data, 71 (or 74% of the total hedges) were used in formal contexts and only 26 (26% of the total hedges) were used in informal contexts. That is to say, the subjects were approximately three times more likely to use hedges in formal than in informal contexts. Thus, the behavior of the Japanese subjects in my study stands in stark contrast to previous English findings.

Table 3

Distribution of Hedges in Formal vs. Informal Contexts

Subject	Gender	No. of Hedges Formal	No. of Hedges Informal	
Hide	M	10	2	
Kazu	M	11	2	
Taka	M	12	1	
Chiho	F	17	9	
Shoko	F	10	4	
Rie	F	11	8	
Total		71	26	97
		(74%)	(26%)	(100%)

The value which Japanese people attach to harmony in social interactions – especially in public, formal settings – encourages the use of hedges. Hedging serves as an expression of a speaker's sensitivity to the feelings of others and inspires feelings of satisfaction and involvement among participants. It is, fundamentally, a strategy for successful communication – a subtle and delicate art, a vital interactional instrument for speakers of Japanese. In sum, hedges function as an effective social lubricant in Japan.

6.4. The female subjects hedged more than the male subjects in informal, private settings.

Table 4

Distribution of Hedges According to Gender

	Formal	Informal	Total
Male	33 (87%)	5 (13%)	38 (100%)
Female	38 (64%)	21(36%)	59 (100%)

Both the male and female subjects hedged more in formal, public settings than informal, private settings. Although there was no significant difference between men's use of hedges and that of women's in formal settings (see Table 4), my data, however, show that the female subjects used approximately three times more hedges in informal settings than the males did, or 36% for the females as

compared to 13% for the males.

This finding suggests that in Japanese, the gender of a speaker *does* affect hedging behavior in informal settings. When I asked my female subjects why they employed certain hedges, their replies included the following: "I tried to be as polite as possible," "I wanted to keep the conversation happy and pleasant by neither being too assertive nor saying things directly," or "I am always concerned about how my friends feel about what I say, and I fear hurting my friends by speaking decisively." Consequently, my data may suggest that Japanese women tend to put considerably more linguistic effort into conveying concern for their friends' feelings or into being polite to their friends than Japanese men do.

6.5. Hedges have positive effects upon the impression formation process.

After interviewing my participants, I found that they believed that people who frequently employ hedges are sincere, polite, likable, considerate, attractive, competent and warm. Many researchers (e.g., Ericson, 1978; Hosman & Siltanen, 1994) working on English have found that hedging has a negative effect on a speaker's image. However, my study of Japanese shows that hedging produce has a positive effect on a speaker's image.

Japanese speakers tend to depend on the listener's use of sensitive guesswork or intuition when trying to understand a message. Japanese listeners are expected to anticipate and interpret a speaker's point based on the careful cues a speakers uses to convey that point. Since a listeners' active participation in interpretation is culturally encouraged, as hedging increases so does the desirable common ground between speaker and listener. When hedging, a speaker may delay or repeat in order to leave a listener room to respond. This allowing for more active listener participation also increases the chance that the listener's response will permit the speaker to be able to claim common ground. This, in turn, enhances the chance that the listener will find the speaker to be less domineering and more likable.

7. Concluding Remarks

The main point emerging from the discussion above is that hedging is not only merely prudent insurance against overstating an assertion, but – as Hyland (1994, 1996a, 1996b, 1998, 2000) postulates – a rational interpersonal strategy. In interaction, hedges are significant because they both support the speaker's position and establish speaker-listener relationships. The use of hedges allows utterances to be made with due caution, modesty, and humility so that the status of such utterances can be negotiated diplomatically when referring to events or actions involving the listener (Hyland, 1994, p. 241). The removal of hedges, accordingly, is a critical linguistic means of bestowing greater certainty on propositions and can profoundly affect the inter-relationship between speaker and listener especially in formal contexts. However, there are forms such as 'I'm not sure, but...' that can function in some contexts to express a degree of certainty and in others as softening devices or facilitating devices.

My findings suggest that hedging is critical for full participation in at least three types of communications in Japanese: (1) *delicate*, i.e., interactions where the speaker is required to show sensitivity towards the feelings to others; (2) *interpersonal*, i.e., interactions aimed at inspiring feelings of satisfaction and

involvement among participants; and (3) *listener-dependent*, i.e., interactions where the speaker greatly depends on his/her listener's ability to make sense of the subtle cues he/she carefully provides. Hedging, then, is powerful behavior in Japanese and mandatory when actively describing or discussing the world.

References

Barnlund, Dean. 1975. *Public and private self in Japan and the United State*. Tokyo: Simal Press.

Baumann, Marion. 1979. "Two features of 'women's speech'?", in B. L. Dubois & I. Crouch (eds.): *The sociology of the languages of American women*. San Antonio: Trinity University Press, 33-40.

Bradac James J. & Anthony Mulac. 1984. "A molecular view of powerful and powerless speech styles: Attributional consequences of specific language features and communicator intentions", *Communication Monographs*, **51**: 307-319.

Bradac James J., Anthony Mulac & Sandra A. Thompson. 1995. "Men's and women's use of intensifires and hedges in problem-solving interaction: Molar and molecular analyses", *Research on Language and Social Interaction*, **28**. 2: 93-116.

Bradley, Patricia H. 1981. "The folk-linguistics of women's speech: An empirical examination", *Communication Monographs*, **48**: 73-90.

Brown, Penelope. 1980. "How and why are women are more polite: Some evidence from a Mayan community", in S. McConnell-Guinet, R. Boker & N. Furman (eds.): *Women and language in literature and society*. New York: Praegar: 111-136.

Brown, Penelope & Stephen Levinson. 1987. *Politeness: Some universals in language usage*. Cambridge: Cambridge University.

Christopher, R. C. 1983. *The Japanese mind: The goliath explained*. New York: Linden Press/Simon & Schuster.

Clemen, Guudrun. 1997. The concept of hedging: Origins, approaches and definitions", in R. Markkanen & H. Schröder (eds.): *Hedging and discourse: Approaches to the analysis of a pragmatic phenomenon in academic texts*. New York: Walter de Gruyter, 235-248.

Ericson, Bonnie., Edgar A. Lind., Bruce C. Johnson & Williams M. O'Barr. 1978. "Speech style and impression formation in court setting: The effects of 'powerful' and 'powerless' speech", *Journal of Experimental social Psychology*, **14**: 266-279.

Hewitt, John P. & Randall Stokes. 1975. "Disclaimers", *American Sociological Review*, **40**. 1: 1-11.

Holmes, Janet. 1982. "Expressing doubt and certainty in English", *RELC Journal*, **13**: 19-28.

Holmes, Janet. 1984a. "Women's language: A functional approach", *General Linguistics*, **24**. 3: 149-177.

Holmes, Janet. 1984b. "Modifying illocutionary force", *Journal of Pragmatics*, **8**: 345-365.

Holmes, Janet. 1984c. "Hedging your bets and sitting on the fence: Some evidence for hedges as support structures", *Te Reo*, **27**: 47-62.

Holmes, Janet. 1995. "Soft and low: Hedges and boosters as politeness devices", in J. Holmes: *Women, men and politeness*. London: Longman, 72-114.

Hosman, Lawrence A. 1989. "The evaluative consequences of hedges, hesitations, and intensifires: Powerful and powerless speech style", *Human Communication Research*, **5**. 3: 383-406.

Hosman, Lawrence A. & Susan A. Siltanen. 1994. "The attributional and evaluative consequences of powerful and powerless speech style: An examination of the 'control over others' and 'control of self' explanations", *Language and Communication*, **14**: 287-298.

Hosman, Lawrence A. & John W. II. Wright. 1987. "The effects of hedges and hesitations on impression formation in a simulated courtroom context", *Western Journal of Speech*

Communication, **51**: 173-188.
Hyland, Ken. 1994. "Hedging in academic writing and EAS textbooks", *English for Special Purposes*, **13**. 3: 239-256.
Hyland, Ken. 1996a. "Talking to the academy: Forms of hedging in science research articles", *Written Communication*, **13**. 2: 251-281.
Hyland, Ken. 1996b. "Writing without conviction? Hedging in science research articles", *Applied Linguistics*, **17**. 4: 433-454.
Hyland, Ken. *1998. Hedging in scientific research articles*. Amsterdam: John Benjamins.
Hyland, Ken. 2000. *Disciplinary discourses: Social interactions in academic writing*. New York: Longman.
Lakoff, George. 1972. "Hedges: A study in meaning criteria and the logic and fuzzy concepts", *Paper from the eighth regional meeting of the Chicago Linguistic Society*: 183-228.
Lakoff, Robin. 1973. "The logic of politeness; or minding your p's and q's", *Papers from the ninth regional meeting of the Chicago Linguistic Society*: 292-305.
Lakoff, Robin. 1974. "What you can do with words: Politeness, pragmatics, and performatives", *Berkeley Studies in Syntax and Semantics*, **16**:1-55.
Lakoff, Robin. 1975. *Language and woman's place*. New York: Harper Colophon Books.
O'Barr, Williams. 1982. *Linguistic evidence: Language, power, and strategy in the courtroom*. New York: Academic.
O'Barr, Williams & Bery Atkins. 1980. "'Women's language' or 'powerless language'?", in S. McDonnell-Guinet, R. Borker & N. Furman (eds.): *Women and language in literature and society*. New York: Praeger, 93-110.
Prince, Ellen F., Joel Frader & Charles Bosk. 1982. "On hedging in physician-physician discourse", in R. J. Di Pietro (ed.): *Linguistics and the professions*. Norwood, New Jersey: Ablex, 83-97.
Skelton, John. 1988. "The care and maintenance of hedge", *ELT Journal*, **43**. 1: 37-43.
Wright, John W. & Lawrence A. Hosman. 1983. "Language style and sex bias in the courtroom: The effects of male and female use of hedges and intensifires on impression information, *Southern Speech Communication Journal*, **48**: 137-152.

Appendix A

Description of Six Participants

Participant	Gender	Age	Marital	City	Occupation	Position	Income	Education	Family
Hide	M	42	M	Yoko-hama	Policeman	Dept. Chief	$75,000	Police Academy	wife 3 child.
Kazu	M	32	S	Fuku-oka	Computer Software	Section Chief	$60,000	Boston Univ. MA	Parents Brother
Taka	M	34	M	Yama-nashi	Jewelry Designer	Dept. Chief	$65,000	Jewelry School	wife 1 child Parents
Chiho	F	31	S	Tokyo	Officer	Assistant Director	$30,000	Seijyoo Univ. BA	Parents
Shoko	F	42	S	Kanagawa	Copy Writer	Section Chief	$5,5000	Waseda Univ. BA	Parents
Rie	F	30	S	Nagoya	Instructor	Junior Lecturer	$35,000	New York Univ. MA	Mother Sister Grandma

Appendix B

Sample Questions in Face-to-Face, Personal Interview with the Six Participants

General Questions

e.g., What do you pay most attention to when you talk to a stranger/ friend/boss/family member/colleague?

Specific Questions A

e.g., What was your general impression during the four conversations with your interlocutors? (e.g., good, bad, etc.) And explain why?

Specific Questions B

Asking the following questions while letting the participant listen to the recorded conversations:

e.g., Why did you say xxx?

Did you really meant it when you said xxx? If not, explain why not.

Appendix C

Sample Questions in Face-to-Face, Personal Interviews with the Interlocutors of the Six Participants

☺ ☺

General Questions

e.g., What is foremost in your mind when you respond to a man's/ woman's utterance?

Specific Questions A

e.g., How did you feel toward your interlocutor during the four conversation? (e.g., sorry, offended, embarrassed, etc.) And explain why.

Specific Questions B

Asking the following questions while letting the interlocutor listen to the recorded conversations:

e.g., Why did you respond yyy when your interlocutor said xxx? Did you really mean it when you responded yyy?

☺ ☺

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The Morphological Licensing of Modifiers

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1 Introduction[1]

The integration of modifiers into the structure of noun phrases is a notorious problem for a compositional semantics. In contrast to the relationship of head and complements, neither does the modifier subcategorise for the modified, nor vice versa. This raises the simple question of how the two combine, that is, how we unify the external Θ-roles of the two involved predicates. Put it into the classical terms of functional application, one must decide what in a modification structure is to be seen as the functor, and what as the argument. Alternatively, one might abandon the desideratum of strict compositionality in terms of functor and argument, and allow for an additional principle of semantic composition, as it is assumed in current syntax-orientated approaches to meaning. I approach the issue from a cross-linguistic morphological perspective, and investigate the extent to which morphological findings can give a clue.

While we have quite some understanding of how complements are morphosyntactically licensed, or linked to the head - i.e. by means of case, of agreement, or of syntactic adjacency -, it is as yet far less understood in what way modifiers can be morphologically licensed. It is obvious that in many languages, such as English, they simply are not overtly licensed, and instead there is the possibility of freely adjoining modifier phrases to the head. I will therefore provide a few case studies of the morphological licensing of modifiers. The goal is to shed light on the following two questions: (i) What does the morphology tell us about the integration of modifiers into the semantic composition: functor-argument-relation, or some other principle? (ii) How does the interface of morphology and semantics look like? I argue that with respect to (i), the morphology provides crucial evidence for semantic type-shiftings, and in particular that the extension of the argument structure of the head can also be assumed for modification. Regarding (ii), I argue that a strictly lexicalist approach to modification is to be preferred over a syntactic one.

2 On the Semantic Treatment of Modification

If we encounter a constellation as simple as one that involves a noun and an intersective modifier, such as an attributive adjective as in (1a), the two cannot semantically combine in terms of a functor-argument-relation. What we want to arrive at is the complex predication in (1b), but the resulting combination does not come about by any of the operations of categorial grammar in terms of functor and argument, that is, functional application.

(1) a. λx [HOUSE(x)] λy [RED(y)]

b. λz [HOUSE(z) & RED(z)]

Usually, therefore, following Higginbotham (1985), one assumes identification of θ-roles for the resulting structure in (1b) – but precisely how this is achieved by the grammar has been a matter of debate.

According to the classical approach of Frege's strict compositionality, one of the two predicates has to be extended into a functor that takes the other as its argument, by a type-shifting. This raises the question as to whether modifiers are conceived of as functors that take the syntactic head, or if they are integrated as arguments of the syntactic head. Both options are illustrated in (2). *P* is a predicate variable for the meaning of the syntactic head, that is of the noun, and *Q* for the meaning of the modifier. In Wunderlich (1997b), the first option, which involves argument extension on the noun as in (2a), is termed ARG (argument extension). The second option, which turns the modifier into a functor with the noun as its argument, as in (2b), is called MOD (modifier extension).

(2) a. ARG: $\lambda P\, \lambda Q\, \lambda z$ [P(z) & Q(z)]
b. MOD: $\lambda Q\, \lambda P\, \lambda z$ [P(z) & Q(z)]

If ARG is applied to a noun such as *house*, we get a functor that takes another predicate: $\lambda Q\, \lambda z$ [HOUSE(z) & Q(z)]. By contrast, MOD operates on the modifier and yields a functor that takes the modified: $\lambda P\, \lambda z$ [P(z) & RED(z)] – this is the classical Montagovian solution.

One remark on the formalism is in order here: in an enriched lambda calculus, both possibilities are actually equivalent. In the framework chosen here, namely that of Lexical Decomposition Grammar (LDG; Wunderlich 1997a&b), (2a) and (2b) nevertheless crucially differ. LDG assumes that the sequence of lambda abstractors that bind the argument variables of the Semantic Form constitute the Theta-Structure, the component that is relevant for the mapping of semantic variables to syntactic positions. In order for the variables to be unequivocally mapped to their syntactic positions (that is, to determine, for example, which

argument is subject and which is object), the order of abstraction of the variables of the Theta-Structure is assumed to be meaningful. This latter assumption, which builds on work by Bierwisch (e.g. Bierwisch 1988), is imposed on the formal calculus, rather than following from it. Under this assumption, (2a) and (2b) significantly differ (see Maienborn 1996:63ff; 154ff for a comprehensive discussion of these two compositional options of Θ-identification).

As far as the morphosyntactic facts are concerned, as long as we look at English, both options seem to be purely stipulatory. The same holds for a different formal solution, which represents a more syntax-orientated solution. The idea is to introduce another principle of semantic composition, in addition to functional application. This strategy is explicitly chosen by Heim & Kratzer (1998:65), who propose a principle called ' Predicate Modification':

(3) Predicate Modification (PM)
If α is a branching node, $\{\beta, \gamma\}$ is the set of α's daughters, and $[[\beta]]$ and $[[\gamma]]$ are both in $D_{<e,t>}$, then $[[\alpha]] = \lambda x \in D_e . [[\beta]](x) = [[\gamma]](x) = 1$

This principle, though carried out in a different, truth-value-orientated notation, eventually yields the same result as the above type-shiftings, namely (1b), but it chooses a different way to get there The required effect is ascribed to the corresponding syntactic constellation, namely a local tree with two property-denoting daughter nodes. This implies that such an approach does not throughout stick to Fregean compositionality, since syntactic phrase structures are conceived to be prior to, or the input of, the semantic interpretation.

My stand towards these two strategies is a radical lexicalist approach that sticks to strict compositionality, i.e. to the type-shifting solution. In the remainder of the paper, I underpin this solution by presenting morphological evidence for the operations in (2). The question that has to be answered first is how an overt licensing of modification may look like. This becomes clearer if we first look at how additional individual arguments are overtly licensed.

3 Morphologically Overt Licensing of Individual Arguments

Among the argument-extending operations on the verb that are overtly displayed in many languages are benefactive and causative. An example from the Bantu language Haya, taken from Hyman & Duranti (1982:219), is given in (4).

(4) Haya: A-ka-cumb-il' ómwáán' ébitooke.
3sg-PAST-cook-APPL child bananas
'He cooked the child bananas.'

An additional argument that is not subcategorised for by the verb, the NP *ómwáán'*, is licensed by the suffix *-il'* on the verb. In principle, the same holds for nouns: if a noun is not inherently relational, in many languages the semantic relation POSS is overtly established, as e.g. in Yucatec Maya (Lehmann 1990):

(5) Yucatec Maya: a. in la'ak
1SG.P'OR friend
'my friend'

b. in nah-il
1SG.P'OR house-POSS
'my house'

The noun *nah* in (5b) can take a possessor only if it is extended by the suffix *–il*. In other words, *-il* changes a one-place predicate into a two-place predicate.

What these typological observations show is that both nouns and verbs exhibit the potential of integrating non-subcategorised individuals overtly: in many languages, introducing an additional individual argument is marked on the head. I will now return to the question as to the overt integration of modification, that is morphological instantiations of the type shifts that were mentioned in section 2.

4 Morphological Evidence for MOD

Let me start by gathering evidence for the option MOD, which shifts the type of the modifier. Consider Kenya Luo, a Nilotic language, where the attributive use is derived from the predicative one by the relative particle *-má* (Tucker 1994):

(6) Kenya Luo: a. pala bí^th
knife sharp
'The knife is sharp'

b. pala má-bí^th
knife REL-sharp
'a sharp knife'

As for modifiers other than adjectives, the adnominal construction of Mandarin Chinese as studied by Rubin (1994) can be considered. In Chinese, all modifiers occur to the left of the noun and end in the particle *de*; see (7).

(7) a. Zhāngsān de shū
Zhangsan MOD book
'Zhangsan's books'

b. youqù de shū
interestingMOD book
'interesting books'

vs. Nà sānbìn shū youqù.
DEM three book interesting
'These three books are interesting.'

c. nà yìbìn zài zhûozi-shàng de shû
DEM one at table-top MOD book
'that book on the table'

d. Ni zùixihuān de nèibìn shû mài-wán le.
PRON2SG most-like MOD DEM book sell-out PERF
'The book that you like most has been sold out.'

Next to possessors as in (7a), adjectives such as *youqu* are licensed this way, and so are prepositional phrases, as well as entire relative clauses, while their predicative counterparts are not; see (7b,c,d), respectively. We are thus dealing with a morphological instantiation of MOD. I therefore follow Rubin in considering *de* a morphological instantiation of MOD, that is, as evidence for our (2b).

Rubin makes essentially the same point for Romanian, where the shape of the morpheme at issue happens to be *de* as well. Looking at these constructions, the overall conclusion that Rubin arrives at is that modification should be generally and exclusively conceived of as the strategy in (2b), that is, as MOD, the operation that shifts the modifier into a functor that takes the noun predicate as its argument.[2] I show in the following that contrary to Rubin's conclusion, the operation MOD does not cover all cases of morphologically overt licensing, but that the type ARG is morphologically instantiated as well.

5 Evidence for ARG: the Persian Ezāfe Construction

The Persian ezāfe morpheme is *–e*, with *-ye* as the allomorph following vowels. The Persian data are according to Amin-Madani & Lutz (1972).[3] One obligatory context of the ezāfe suffix is possessor constructions, as illustrated in (8).

(8) a. asb-e pedar
horse-EZ father
'father's horse'

b. sag-e in mard
dog-EZ DEM man
'this man's dog'

The suffix thus serves as an overt means of an argument extension like that in (5) above. In addition, it licenses all kinds of postnominal modifiers, such as adjectives, prepositional adjuncts, adverbials, and ordinal numbers; see (9) to (12):

(9) a. mard-e pir
man-EZ old
'old man'

b. māhiy-e kuèek
fish-EZ small
'small fish'

(10) a. telegrām-e be Rom
telegram-EZ to Rome
'telegram to Rome'

b. larzidan-e az tars
tremble-EZ of fear
'(the) trembling with fear'

(11) a. kār-e hamiše
work-EZ always
'the usual work'

b. dar-e cap
door-EZ left
'left door'

(12) a. bace-ye avval
child-EZ first
'first child'

b. xiyāban-e sevvom
street-EZ third
'third street'

Relative clauses are also construed this way, the only difference being that instead of the form *-e*, the allomorph *-i* of the ezāfe occurs:

(13) Ketāb-i, ke ruy-e-mîz bud, kojā ast?
book-REL.EZ REL.COMP on-EZ-table lay where COP.3SG
'Where is the book that lay on the table?'

Appositive relative clauses, by contrast, are not introduced by *–i*. This shows clearly that for the ezāfe suffixes *-e* and *-i*, we are dealing with the licensing of genuine modifiers in the sense of restricting the denotation set.

In the presence of several modifiers, each of them is overtly licensed by attaching the ezāfe to each preceding modifier, or to the noun, respectively:

(14) sag-e sefîd-e bozorg
dog-EZ white-EZ big
'the big white dog'

We are therefore dealing with a recursive construction, as it is expected from a modification structure. Due to its occurrence on the right-most element of each local structure, the ezāfe apparently resembles a special clitic, or a 'phrasal' suffix. I will, however, now propose a representation as a lexical suffix.

6 Representation of the Ezāfe

The lexicalist solution that I now develop is based on an explicit semantics of the ezāfe suffix and on the notion of argument inheritance. I assume lexical representations in which the ezāfe suffixes are assigned the semantics of ARG. This enables a simple and surface-true representation of the construction.

I assume that the semantic contribution of the ezāfe is characterised by ARG as in (2a): λP λQ λx [P(x) & Q(x)]; that is, the suffix takes a one-place predicate and introduces a further predicate, which shares its external argument with the former. In (15a), the ezāfe is applied to a noun, in (15b) to an adjective. (15a), which results from the semantics of (2a) applied to the noun *sag*, can readily combine with an adjective such as *bozorg* in (15c).

(15) a. *sage*: λQ_1 λx [DOG(x) & Q_1(x)]
b. *sefide*: λQ_2 λy [WHITE(y) & Q_2(y)]
c. *bozorg*: λz BIG(z)

The semantic composition that is required for adjectives that are themselves marked by the ezāfe, such as *sefid-e* as in (14), is achieved by argument inheritance: if (15a) is applied to (15b), the argument of the noun, λQ_1, is saturated by the adjective *sefid* (WHITE), while λQ_2 is still an open argument and therefore inherited to the resulting structure, to be saturated by the further modifier *bozorg*. This accounts for, or semantically reconstructs, what at first sight appears to be syntactic phrasal scope of the suffix.

Semantically, then, the ezāfe extension constitutes a potentially complex structure, in the sense that not merely the noun can be modified, but rather a noun phrase that already contains a modifier.

As for the morphosyntactic selection, the fact must be captured that the ezāfe is normally attached to the noun, hence the lexical head of the noun phrase; on the other hand, the ezāfe is also found phrase-finally, namely on the adjective in recursive modification as in (14). Note, however, that the ezāfe, contrary to English genitive *-s* (as in *the queen of England's hat*), is not really phrasal, but rather a genuine word-level suffix: it never attaches to, for example, adverbs, or some other category; rather, it is only found with nouns and adjectives. This would not be explained if it were seen as a 'phrasal affix', because as such one would expect it to attach to whatever category that would occur at the right edge of the noun phrase. Therefore, I analyse it as to combine in the lexicon with the category it selects for. I note this state of affairs in the framework of MM (Wunderlich & Fabri 1996), in terms of the lexicon entries in (16):

(16) a. *-e*: /e/; [+min]; +max / -art; λP λQ λx [P(x) & Q(x)]
b. *-i*: /ɪ/; [+min]; +max / -art; λP[CP,+wh] λQ λx [P(x) & Q(x)]

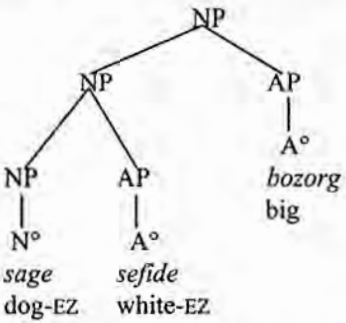
The feature [+min] characterises an element as morphologically bound, hence as an affix. The input specification [-art] (for '[−articulated argument structure]') is extensionally equivalent to the more traditional feature [+N], in that it generalises over nouns and adjectives (see Wunderlich 1996). These two categories are exactly the ones that the ezāfe is suffixed to. The output feature [+max] ('maxi-

mal with respect to word structure') states that the word projects into the syntax, thus as N° or A°, respectively. (16b) represents the allomorph *-i* used for the licensing of relative clauses, hence the specification [CP,+wh].

The fact that in combinations of noun and adjective, the suffix attaches to the noun rather than to the adjective, although in terms of morphosyntactic features it selects for either category, is captured by the semantic component of its entry. Recall from section 2 that in LDG, the order of lambda abstractors is relevant. Since the left predicate variable of the conjunction Px & Qx is the one to be saturated first by the operation ARG, and hence in the semantic component of (16) as well, the suffix operates on the head and leaves the argument position for the modifier open, thus giving rise to *sage sefid*, rather than **sag sefide*.

Under this account, the affixation of the ezāfe takes place in the lexicon already. For the syntax, this gives rise to phrase structures as simple as in (17):

(17)



The ezāfe suffix, that is the morphological extension of ARG, is thus not only phonologically realised on the preceding noun or adjective, but is also morphosyntactically literally conceived of as an extension of N^0 or A^0, respectively.[4]

Space limitations prevent me from contrasting the current proposal to the syntactic treatment by Ghomeshi (1997), where the ezāfe is conceived of as base-generated head adjunction ($[N^0[N^0\ X^0]]$). Ghomeshi thus only allows for modification by X^0, not by phrases, and is furthermore forced to assume that Persian nouns do not project an NP. In Ortmann (2000), I argue that Ghomeshi fails to account for modification by relative clauses (licensed the allomorph *-i* of the ezāfe), which in contrast to adjectival modifiers are clearly phrasal.

7 Why Semantic Flexibility ≠ Morphological Flexibility

I have established so far that the two different type-shifting strategies the formal language of categorial grammar provides are corroborated by the findings of natural language. For languages such as English where the morphology gives us

no clue, i.e. where modifier and modified simply combine by adjunction, I assume the application of an abstract template, where ARG and MOD are equally appropriate. I shall now show that even this flexibility is evidenced by natural language morphology, namely by that of some Austronesian languages.

Consider the case of Tagalog, as studied by Rubin (1994). Tagalog licenses the combination of noun and modifier by the 'nasal marker', i.e. the velar nasal or its allomorph *na*, which is found after consonants. The examples in (18) show that this marker only occurs with attributive, but not with predicative modifiers.

(18) a. libro -ng nasa mesa
book ? on table
'the book on the table'

a'. nasa mesa -ng libro
on table ? book
'the book on the table'

a". Nasa mesa ang libro.
on table TOPIC book
'The book is on the table.'

b. bahay na maganda
house ? beautiful
'beautiful house'

b'. maganda -ng bahay
beautiful ? house
'beautiful house'

b". Maganda ang bahay.
beautiful TOPIC house
'The house is beautiful'

c. bahay na nakita ko
house ? saw I
'house that I saw'

c'. nakita ko -ng bahay
saw I ? house
'house that I saw'

c". Nakita ko ang bahay.
saw I TOPIC house
'I saw the house'

What is striking is the free word order, thus noun < modifier as in (18a,b,c) next to modifier < noun as in (18a',b',c'). The nasal marker occurs enclitic to the first constituent, regardless of whether this is the noun or the modifier. In his analysis, Rubin (1994) subsumes this marker under MOD. However, one might equally legitimately subsume it under ARG, because there are no test criteria for forming a constituent with either the head or with the modifier. The conclusion is therefore that it must be left open whether *ng/na* instantiates ARG or MOD, hence my use of the question mark in the glosses.[5] Note that Nichols (1986:65), who also uses example (18a), comes to the same conclusion: it is only the word order that determines the locus of the particle, like with 2nd position clitics. Within her typology of head marking vs. dependent marking, Nichols therefore considers these examples as a type of its own, which she terms 'neutral marking'.

One might therefore suspect that we are dealing with a case of 'anything goes', that is, the difference between ARG and MOD would seem an artefact of the theory rather than a matter of empirical substance. My answer is that this may indeed be true of Tagalog and Palauan, but that a cross-linguistic perspective reveals a more differentiated image. The typological correlation that I propose with respect to the distinction of free and bound morphemes is that affixes instantiate the ARG type (as in Persian), while free morphemes (i.e. particles) syntactically combine with the modifier and therefore instantiate MOD, as in Chinese and Romanian. This correlation can be motivated by general properties of morphology: affixes by their definition show a high extent of bondedness to a syntactic category; for example, they select verbs or nouns. Particles, by contrast, being free morphemes, do not exhibit bondedness to a specific category. As we have seen, the range of syntactic categories that ARG operates on is limited to that of noun and adjective, hence to the [-art]- (or [+N]-) categories. Given this, the prerequisite for a high degree of bondedness, hence for affixhood, is met; which is corroborated by the fact that it is indeed affixes what we find as exponents of ARG, as in the case of the Persian ezāfe.

As regards MOD, and in particular the potential host categories for its exponents, there is quite some range of categories that qualify as modifiers to the noun, such as possessor noun phrases, adjective (phrases), prepositional phrases, and relative clauses. Note that especially the latter can in principle end in any syntactic category. Therefore, an affix with its rigid categorial restriction is not an appropriate morphological means for combining with a modifier. By contrast, a particle need not be integrated into the morphological or phonological word; rather, as in the case of Chinese *de*, it can occur adjacent to any category, depending on what category the relative clause happens to end in.[6] It follows that particles are, while affixes are not, appropriate elements for instantiating MOD.

The theoretical implication of this typological trend is that the combinatorial flexibility of semantics is restricted by morphological factors such as grammaticalisation, categorial selection, bondedness or word-hood.

8 Results

The object of this paper was to present empirical criteria from a morphological perspective in order to show how modifiers are compositionally integrated. The findings can be summarised as follows:

- In modification structures, type-shifting operations such as the extension of the argument structure of a syntactic head are often morphologically overt and have therefore empirical reality, rather than being a construct of formal seman-

tics. One such empirically justified means of NP-modification is ARG, instantiated in languages such as Persian or Kurdish.

- There is equally clear evidence for MOD; both formal options of categorial grammar are thus grammaticalised, varying across languages.
- The tendency with respect to the distinction of free and bound morphemes is that affixes instantiate ARG, whereas free morphemes (mainly particles) syntactically select modifiers and instantiate MOD. Besides, one encounters flexible systems, as those of Tagalog and Palauan, where no clear decision can be made whether the morpheme under question instantiates ARG or MOD.
- The type-shifting for modification is not overtly grammaticalised in all languages; in English, for example, it is assumed to be abstract. I have claimed that ARG and MOD are universally operative. This is parallel to, for example, the assumption of a definiteness operator in languages without a definite article.

The overall implication for the typological variation of natural language is that there is a conflict between the explicitness of semantic composition on the one hand and morphosyntactic economy on the other hand. While the former requirement is respected by Persian and the other languages that are dealt with in this paper, the latter is respected, for example, by English, where modification is simply achieved by adjunction. As for the latter language type, our interpretational component is flexible enough to accommodate also those modification structures that are not explicitly marked as such. In the former type, by contrast, we encounter the less economic, but more transparent strategy.

9 Notes

[1] The work reported here was funded by the Research Programme SFB 282 "Theory of the Lexicon", financed by the German Research Foundation (DFG). I have profited from discussions with Manfred Bierwisch, Regine Eckard, Jane Grimshaw, Klaus von Heusinger, Ingrid Kaufmann, Thomas Müller-Bardey, Barbara Stiebels, Dieter Wunderlich, and Thomas Ede Zimmermann.

[2] Next to a compositional semantics, Rubin's main concern is a syntactic analysis, under which MOD is conceived of as a functional head, and the modifier as its complement, the structure thus being isomorphous to the semantic composition. In this paper, however, I will only comment on the semantic aspects of Rubin's account.

[3] The examples were also checked by Sara Schajan, whose kind support I gratefully acknowledge.

[4] Essentially the same state of affairs as in Persian is found in its Iranian relative Kurdish, although the situation is more complex in this language than merely involving the semantics of ARG; for details and analysis see Ortmann (2000).

[5] Virtually the same situation obtains in Palauan, like Tagalog a Western Austronesian language; see Ortmann (2000) for details.

[6] This does not exclude the possibility that a closer phonological relation comes about, namely cliticisation, as in the case of the English possessive *-s*, and of Tagalog *-ng*. In these cases, we are dealing with 'phrasal' affixes, hence clitics, rather than with true affixes. The tendency towards cliticisation, however, does not necessarily imply a closer morpho-syntactic relation.

10 References

Amin-Madani, Sadegh and Dorothea Lutz. 1972. *Persische Grammatik*. Heidelberg: Groos.

Bierwisch, Manfred. 1988. "On the grammar of local prepositions", Manfred Bierwisch, Wolfgang Motsch and Ilse Zimmermann (eds.) *Syntax, Semantik und Lexikon*. Berlin: Akademie-Verlag (= studia grammatica 29), 1-63.

Ghomeshi, Jila. 1997. "Non-Projecting Nouns and the *Ezafe*-Construction in Persian", *Natural Language & Linguistic Theory* **15**: 729-788

Heim, Irene and Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Oxford: Blackwell.

Higginbotham, James. 1985. "On Semantics", *Linguistic Inquiry* **16**: 547-593

Hyman, Larry M. and Alessandro Duranti. 1982. "On the Object Relation in Bantu", P. Hopper and S. Thompson (eds.) *Studies in Transitivity*. New York: Academy Press (= Syntax and Semantics 15), 212-239.

Lehmann, Christian. 1990. "Yukatekisch", *Zeitschrift für Sprachwissenschaft* **9**: 28-51

Maienborn, Claudia. 1996. *Situation and Lokation: die Bedeutung lokaler Adjunkte von Verbalprojektionen*. Tübingen: Stauffenburg.

Nichols, Johanna. 1986. "Head-marking and dependent-marking grammar", *Language* **62**: 56-119

Ortmann, Albert. 2000. *Morphologische Kategorien des Nomens: Merkmale, lexikalischer Strukturaufbau und Ökonomie*. Doctoral Dissertation, Heinrich-Heine-Universität Düsseldorf.

Rubin, Edward J. 1994. *Modification: A Syntactic Analysis and its Consequences*. PhD dissertation, Cornell University.

Tucker, A. N. 1994. *A Grammar of Kenya Luo (Dholuo)*. Cologne: Rüdiger Köppe Verlag.

Wunderlich, Dieter. 1996. "Lexical Categories", *Theoretical Linguistics* **22**: 1-48.

Wunderlich, Dieter. 1997a. "Cause and the Structure of Verbs", *Linguistic Inquiry* **28**: 27-68.

Wunderlich, Dieter. 1997b. "Argument Extension by Lexical Adjunction", *Journal of Semantics* **14**: 94-142.

Wunderlich, Dieter and Ray Fabri. 1996. "Minimalist Morphology: An Approach to Inflection", *Zeitschrift für Sprachwissenschaft* **14**: 236-294.

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Very Local A-bar Movement in a Root-first Derivation

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In Richards (1999), following an approach developed by Phillips (1996, to appear), I pursued the idea that the syntactic derivation involves creation of the material at the top of the tree first, and adds new material to the bottom of the existing structure. One of the phenomena for which I offered an account in those terms was the conditions on the relation between an expletive and its associate which are exemplified in (1):

(1) a. There seems to be a man in the room
b. *There seems a man to be in the room
c. There was heard [a rumor that a man is in the room]
d. [A rumor that there is a man in the room] was heard

The account I developed of the facts in (1) made a surprising prediction about A-bar movement: that under certain circumstances, such movement should be very local, essentially unable to skip an intervening A-position. In this paper I will try to show that this prediction is in fact correct, and accounts for a number of recalcitrant facts. In the next two sections I will review some salient properties of the theory in Richards (1999), which make the prediction that A-bar movement should be very local: section 1 will be a review of Richards' (1999) proposal about expletive-associate relations, and section 2 will outline the way successive-cyclic movement was handled, via a mechanism known there as Sinking. In section 3, I will try to show that A-bar movement is indeed very local in a certain range of cases.

1. Expletive-associate relations

In Chomsky (1995, 1998), the facts in (1) are accounted for in terms of a bottom-up derivation and a preference for Merge over Move. Consider the derivation of an example like (1a). The derivation begins at the bottom of the tree, and proceeds until it reaches the first EPP position, namely the specifier of the embedded infinitival TP:

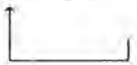
(2) __ to be a man in the room

At this point, we could in principle either take *there* from the Numeration and insert it or move *a man*; either option would satisfy EPP. A preference for Merge over Move requires that we take the first option, inserting *there*:

(3) there to be a man in the room

The derivation then continues until the higher EPP position is reached, at which point *there* must move to check EPP:

(4) there seems __ to be a man in the room



This derivation correctly yields (1a), and not (1b). It encounters difficulties, however, with examples like (1c) and (1d). In (1c), the derivation begins by constructing the embedded clause, and eventually reaches the EPP position:

(5) __ is a man in the room

At this point, we might expect to be forced to insert *there*. Insertion of *there* is certainly possible, as the well-formedness of (1d) shows, but is not forced. Chomsky's (1998) solution to this problem is to divide the Numeration for the sentence into smaller Numerations. In particular, the embedded clause of (1c) has its own Numeration, which does not contain *there*. As a result, we have no choice but to move *a man* to satisfy EPP at the point in the derivation shown in (5), and the derivation gives the correct result.

In Richards (1999) I proposed an alternative to this approach which does not require the use of sub-Numerations, or even of a Numeration. Consider the derivation of (1a), beginning at the top. At some point, we reach a structure in which an EPP feature will need to be satisfied:

(6) There seems __ to

Here I suggest that there is a preference for Move over Merge; we might think of this as a preference for manipulating objects already on the "workspace", as opposed to accessing the lexicon to get new material. Thus, we prefer to create a trace of *there* in the EPP position. The derivation then continues until the theta-position is reached:

(7) There seems to be __

Here, again, we would prefer to create a trace of *there*, but this option is blocked by whatever well-formedness conditions on theta-assignment prevent the assignment of theta-roles to expletives. We have no option, then, but to access the lexicon for the material necessary to construct *a man* and insert it.

This account has no problem with the well-formedness of (1c). The derivation proceeds from the top down to the EPP position of the embedded clause:

(8) There was heard [a rumor that __]

At this point, as always, we would prefer copying *there* to inserting new material from the lexicon. However, copying *there* is not an option here; locality conditions on A-movement prevent the creation of a trace of *there* in this context. Again, we are forced to insert *a man*:

(9) There was heard [a rumor that a man...]

The derivation can then proceed as desired.

This account seems to be in trouble, though, when we begin to consider A-bar movement. If there is a preference for creation of copies over all other possibilities, then why can A-bar movement skip A-positions in which it could land? For instance, why is (10a) not blocked by (10b)?

(10) a. Who did John kiss __?
b. Who __ kissed John?

Of course, the sentences in (10) mean very different things, and we might appeal to this as an overriding factor. This move would not harm the account given above of the facts in (1), where the relevant sentences would presumably have the same meaning if they were both grammatical.

In fact, however, I want to explore the possibility that this odd prediction is correct. We will see that there are a number of cases of A-bar movement which cannot skip an A-position in which it could land. This theory makes such a condition on A-bar movement very natural; what we have to try to develop now is an understanding of when A-bar movement is subject to this condition.

2. Sinking and non-Sinking

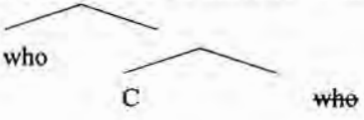
To begin with, I will try to develop a way for this account to permit examples like (10a). This will be the kind of movement referred to as "Sinking" in Richards (1999). I will then try to show that in a number of cases in which Sinking is not available, A-bar movement is in fact very local.

Consider the beginning of a derivation for an example like (10a):

(11)

The grammar prefers, on this theory, to make copies of objects already in working memory whenever possible. In (11), there is a copying operation we can perform which will contribute to feature-checking. It is determinable by inspection of *who* that it has features which will need to be checked later; Case features, for instance, if nothing else. Since the position of *who* in (11) is not one in which its Case feature can be checked, checking the Case feature of *who* will require two steps: the insertion of a head which can check *who*'s Case feature, and the creation of a copy of *who*. There is no a priori reason for these operations to be required to occur in a particular order. In fact, we are entertaining the possibility that creation of copies, when licit, is preferred over all other options. We are therefore entitled to create this copy immediately:

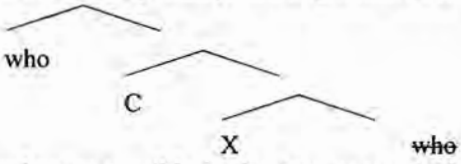
(12)



Obviously the preference for copying over other operations must be limited in some way; if it were not, derivations would simply consist of long strings of copies of the first lexical item accessed, and would never converge. Suppose we assume that the preference for creating copies is overridden by a requirement that operations serve some syntactic purpose: perhaps a requirement that they contribute to feature-checking or to satisfaction of selectional restrictions. In (12), we could avoid forcing the system to copy *who* over and over again by making the Case feature ineligible to trigger the creation of copies once it had been copied once. This could be formalized in a number of ways, but in the interests of concreteness, suppose we borrow Chomsky's (1995) terminology of *checking* and *deletion*, where checking makes a feature unable to trigger further syntactic operations and deletion actually removes it from the representation. We can say, then, that a feature is checked when it triggers creation of a copy (and is thenceforth unable to trigger creation of more copies), and deleted when it enters into a local relation with another feature of the same kind[1]. The terminology is unfortunately somewhat confusing, since "checking", in the technical sense intended here, takes place before a "checking relation" with another feature is established. But this is purely a terminological problem; the goal is to disqualify the Case feature of *who* in (12) from causing (and, in fact, forcing) the creation of infinite numbers of copies.

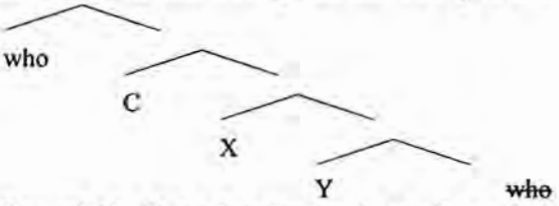
In (12), then, we have exhausted our options for creating copies for the time being, since the Case feature of *who* has been "checked" by copying. We can now introduce new material from the lexicon. The new material must be as low as possible in the tree (this is the condition which forces the derivation to proceed from the top down). We might insert a new object X, as in (13):

(13)



X is as low as possible in the tree, as required; it is c-commanded by all the other objects in the tree, and c-commands as few of them as possible. Further insertion of the same kind will separate the two copies of *who* further:

(14)

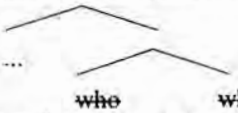


The effect of this kind of derivation is to allow *who* to "move" successive-cyclically down the tree until its Case-checking position is reached and its Case feature is deleted. I put "move" in scare quotes because there is in fact only one

copying operation, which occurs near the beginning of the derivation; each step in the successive-cyclic movement happens as a result of the way in which new material is inserted, with no need to posit ad hoc features to drive the movement. Let us refer to this kind of movement as "Sinking".

One property of Sinking is worth emphasizing here: it should be impossible for intersecting movement paths to both involve Sinking. At some point in such a derivation, we would have a tree with two copies of wh-phrases:

(15)



At this point in the derivation a new object must be introduced. If it must be introduced as low as possible in the tree (and if binary branching must be respected), then one of the wh-paths will stop Sinking; the new object must c-command as few things in the existing tree as possible, and this involves c-commanding only one thing. Thus, one of the wh-copies will no longer be at the bottom of the tree, and will be unable to Sink further. In cases of intersecting wh-paths, then, one path will be able to Sink, but the other will have to undergo movement of a more traditional kind, waiting to create a copy until a checking position is created[2].

Another case in which Sinking might be unavailable would have to do with properties of the head of the dependency. At the beginning of this section I noted that it is detectable by inspection, for certain wh-phrases, that they have a feature on them that needs to be checked. If the grammar avoids look-ahead, we might expect to discover cases in which it is not detectable by inspection that an operator has features that will be checked later. Such cases would then be ineligible for Sinking. Suppose we make the conservative assumption that movement is driven by the kinds of features that standardly drive it in Minimalism; the ones which will be important for this paper will be Case features and wh-features. A wh-phrase introduced in Spec CP, then, has Case and wh-features, and has its wh-feature deleted immediately by C, leaving its Case feature, which can drive Sinking, as we have seen. An NP introduced in a Case-checking position, on the other hand, would start the derivation with a Case feature, which would be deleted immediately once it was inserted in the tree. If there are no such things as "theta-features", then, the head of an A-movement chain would be a case in which it is not detectable by inspection that movement will take place; the head of an A-movement chain should never have unchecked features, assuming that improper movement is somehow ruled out.

It is in cases in which Sinking is unavailable that the surprising prediction with which this paper began should be realized. If a position created in the course of the derivation could be filled by a copy of a syntactic object which is already present in the tree, then copying should be forced. More simply, non-sinking movement should be unable to skip possible landing sites. We have seen that A-

movement can never be Sinking, and that it should therefore be unable to skip A-positions, and this prediction seems correct. I will now try to show that A-bar movement which is not Sinking also cannot skip A-positions.

3. Very local A-bar movement

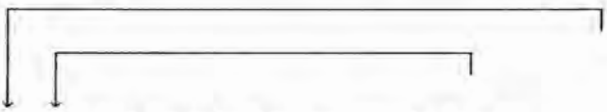
In this section I will discuss a number of cases of very local A-bar movement, and will try to show how their distribution and properties follow from the theory developed above.

3.1 Inner *tough*-movement

Jacobson (2000) points out a surprising property of *tough*-movement. *Tough*-movement generally seems to exhibit the locality properties of A-bar movement (Jacobson 2000):

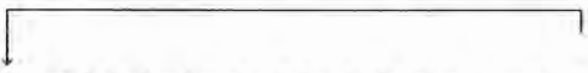
(16) Lima beans are hard for me to imagine anyone thinking
they can get Mary to eat __

However, when *tough*-movement intersects with another A-bar movement, it becomes much more local[3]:



(17) *Which violin is that sonata hard to imagine John playing __ on __?

As Jacobson points out, (17) contrasts sharply with a similar example with no *tough*-movement:



(18) Which violin is it hard to imagine John playing that sonata on __?

There appears to also be a contrast between (17) and the minimally different (19), where *John* has been exchanged for PRO[4]:

(19) ?Which violin is that sonata hard to imagine playing __ on __?

The contrast between (17) and (19) suggests a relevant generalization; if a *tough*-movement path intersects with another A-bar movement path, it cannot cross an A-position in which it could land. Assuming for the moment that it is possible to identify the subject position of a control infinitive as an impossible landing site for an A-bar moving operator, the contrasts in (17-19) follow. As we saw in the previous section, this is in fact one of the contexts in which we should expect Sinking to be impossible; intersecting paths cannot both involve Sinking, and non-Sinking paths should be very local. In (17), on this approach,

the *tough*-movement path crosses the position occupied by *John*, a position which it could itself fill, thus avoiding lexical access.

3.2 Vacuous movement

Chung and McCloskey (1983) and Chomsky (1986) pursue the hypothesis that string-vacuous wh-movement does not occur. Their arguments are based on contrasts like the one in (20):

(20) a. This is a paper [that we need to find someone
[who __ understands __]
b. *This is a paper [that we need to find someone
[who we can intimidate __ with __]

The idea is that in (20a), string-vacuous movement of *who* does not occur and therefore does not create a wh-island.

The contrast in (20) could also be understood in terms of the theory under development here, however, as another instance in which, when two A-bar paths intersect, one of them is forced to be very local. In (20b), on this account, the offending A-bar dependency is the one headed by *who*, which skips the A-position occupied by *we*.

These two approaches make different predictions in cases in which the shortest possible movement path is not string-vacuous. The contrast in (21), for instance, seems to argue in favor of the alternative under development here:

(21) a. This is a paper [that we need to find someone [to persuade __
[to ask John to read __]
b. *This is a paper [that we need to find someone [to persuade John
[to ask __ to read __]

The contrast in (21) is subtle, but seems to go in the expected direction. Here the inner path in (21b) crosses the A-position occupied by *John*.

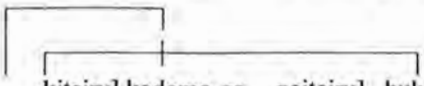
3.3 Contained Relative Clauses in Japanese

Kuno (1973), Hasegawa (1984) and Ochi (1997) investigate a condition on relativization in Japanese. They note that when relativization paths intersect, one of the paths is required to be very local. Hasegawa (1984) offers the following generalization about the facts:

(22) The relativization of a phrase in a relative clause is allowed if
a. the phrase is the subject of the relative clause, and
b. the head of that relative clause is the subject of the higher clause.

I will refer to relative clauses that are contained in larger relative clauses as "contained relative clauses". (22a) accounts for the contrast in (23); in (23a) the movement path from the outermost head noun involves the subject of the contained relative clause, while in (23b) it is the object that is so relativized[5]:

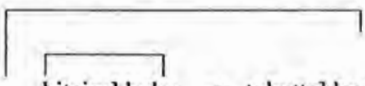
(23) a. [[__ __ kiteiru] huku -ga kitanai] kodomo
wearing clothes NOM dirty child
'the child [who the clothes [that __ is wearing __] are dirty]'



b.* [[__ __ kiteiru] kodomo-ga naiteiru] huku
wearing child NOM is-crying clothes
'the clothes [that the child [who __ is wearing __] is crying]'

(22b) accounts for the contrast in (24); in (24a), the contained relative clause modifies the subject of the relative clause in which it is contained, while in (24b) the contained relative clause modifies the object:

(24) a. [[__ __ kiteiru] huku -ga kitanai] kodomo
wearing clothes NOM dirty child
'the child [who the clothes [that __ is wearing __] are dirty]'



b.*[Mary-ga [__ __ kiteiru] huku -o tukutta] kodomo
Mary NOM wear clothes ACC made child
'the child [who Mary made the clothes [that __ is wearing __]'

The condition in (22) imposes a requirement which is familiar to us by now; when A-bar paths intersect, one of them is forced to be very local, and is rendered unable to skip A-positions in which it could in principle land. In (24b), for instance, the offending path is that connected to *kodomo* 'child'; this path is unable to skip the position occupied by the NP *Mary*.[6]

Ochi (1997) points out that these locality conditions on relativization are specifically conditions on relativization paths which intersect with other relativization paths. Just crossing an island doesn't impose this kind of locality on relativization in Japanese, as we can see in examples like (25a), where the CED is violated, and (25b), where a wh-island is crossed (Ochi 1997, 215)

(25) a. [[John-ga __ katte kita node] minna -ga yorokonda] hon
John NOM bought came because everyone NOM was-glad book
'the book [that everyone was glad [because John bought __]]'

b. [FBI-ga [sono otoko-ga __ tsukatta ka dooka] sirabeteiru] naihu
FBI NOM that man NOM used whether investigate knife
'the knife [that the FBI is investigating [whether that man used]]'

There is an intriguing difference between this case and the other cases reviewed in the previous sections. In the examples discussed above, when paths intersect, the path which is required to be very local is the one whose eventual landing site is lower (that is, the inner path, in nested paths). Consider, for example, the contrast in (21), repeated as (26):

(26) a. This is a paper [that we need to find someone [to persuade __ [to ask John to read __]
b. *This is a paper [that we need to find someone [to persuade John [to ask __ to read __]

In (26), the relativization path associated with *someone* is required to be very local, because it intersects with the relativization path associated with *paper*. (26b) is therefore ruled out, because the relativization path for *someone* crosses the argument position occupied by *John*. In (26a), however, we can see that the relativization path for *paper* is not required to be very local; it can skip *John* with impunity. Thus, the very local path is the "inner path", the one headed by the operator whose landing site is structurally lower.

In Japanese, on the other hand, the very local path is the one whose operator is structurally higher. We saw in (24) above, for instance, that the path associated with *kodomo* 'child', the outermost head noun, is required to be very local when it intersects with another relativization path. This contrast between English and Japanese will presumably be relevant for investigating the derivation of dependencies in Japanese in this kind of model. One generalization that would cover both English and Japanese is that the chain of the intersecting chains which must be very local is the one whose head is linearly rightmost. If this chain is the one created last in the derivation, and if Sinking is preferred over non-Sinking movement when both are available (as seems reasonable, assuming the approach sketched in section 2 above), then we may be in a position to explain these facts. I will leave this issue for further work.

3.4 Tense islands

It is sometimes suggested (e.g., by Chomsky 1986, Frampton 1990b, Manzini 1991, Boyd 1992) that tense plays a role in strengthening island effects. This suggestion is based on contrasts like the one in (27) (Manzini 1991, 117):

(27) a. What do you wonder how [to repair __]
b. *What do you wonder how [John repaired __]

The literature on this contrast has suggested that it has to do with tense: the island in (27b) is more impermeable to extraction than the one in (27a), because the island in (27b) is tensed while the island in (27a) is infinitival.

There is, of course, another difference between the examples in (27), which is that the island in (27b) has a subject position of the kind which could in principle be occupied by a wh-trace, while the island in (27a) has a subject position which is occupied by PRO and could not be an origin for wh-

movement. If islands have the effect of preventing Sinking paths from entering them, then the contrast in (27) might follow from the theory under development in this paper; the path of *what* in (27a) is very local (once it enters the island), but the corresponding path in (27b) is not. In order for the account to work, we will have to assume that the path of *what* in (27) is allowed to Sink down to a position just above the island, and is required to stop sinking at that point[7, 8]. Neither of the examples in (27) involves a path which is very local all along its length; both of these paths skip the matrix subject position.

Evidence that it is the presence of *John*, rather than of tense, which makes (27b) ill-formed comes from triples like the one in (28):

(28) a. What are you wondering [how to try to repair __]
b. *What are you wondering [how John tried to repair __]
c. *What are you wondering [how to persuade John to repair __]

(28c) is an example of the type for which the theories about the examples in (27) make different predictions; the island is infinitival, but the potentially offending path does cross an A-position which it could in principle fill (that of *John*). English-speakers generally agree that (28c) seems worse than (28a), which is encouraging for the theory under development here. Some of my informants find (28b) worse than (28c); we may be forced to concede that Tense does play a role in worsening island effects, and that (28b) violates both this Tense-imposed condition and the requirement that A-bar paths into islands be very local, while (28c) only violates this strict requirement of locality.

4 Conclusion

In this paper I have suggested that under certain circumstances, A-bar movement exhibits a kind of strict locality which is more typically associated with A-movement. I have also tried to show that the account sketched in Richards (1999) of how dependencies are created in a top-down derivation makes this phenomenon appear fairly natural. It is always the case, I have suggested, that copying of existing material is preferred to retrieving new material from the lexicon (that is, Move is preferred over Merge). This principle was used in Richards (1999) to explain facts about the relation between expletives and their associates, as we saw in section 1 above. I have suggested that this principle holds for A-bar movement as well, and is realized in one of two different ways. When possible, the head of the A-bar dependency is created immediately, and new lexical material is inserted above the copy until the copy reaches its destination; this is the kind of very successive-cyclic "movement" I referred to as Sinking. When Sinking is impossible for some reason, then A-bar movement is very local, just like A-movement.

[1] There will also be cases in which features are checked under Merge; we may regard these as involving deletion without checking, or alter the definition of checking slightly to accomodate these cases. Nothing crucial hinges on the choice, as far as I can see.

[2] This contrast between distinct types of wh-movement is highly reminiscent of Manzini's (1992) distinction between address-based and categorial index dependencies (and see also Marantz (1994) for a discussion of intriguing locality distinctions made by that theory).

[3] It is unimportant for our purposes here whether *tough*-movement involves movement of the NP *that sonata* or of an operator associated with it.

[4] Jacobson (2000) actually denies this; she would accord (17) and (19) the same status.

[5] Here I draw relativization paths connecting the relativization site with the head noun; this is simply for ease of representation, and is not meant to be a stance on the question of whether a null operator is involved.

[6] This reasoning might lead to an account of the contrast in (23) as well, depending on whether the other relativization path is understood as involving Sinking. If neither path is Sinking, then the conditions on the derivation should be satisfied in (23b); at each of the trace positions, a copy is made of an operator, and the lexicon is not accessed. On the other hand, the contrast in (23) might be susceptible to explanation by other means; it seems to generally be the case that intersecting movement paths prefer to cross (speaking hierarchically) in Japanese. For some discussion, see Nishigauchi 1990, Saito 1994, Grewendorf and Sabel 1996, Richards 1997, to appear, Tanaka 1998.

[7] This is not the assumption defended in Richards (1999), where I assumed that the wh-phrase from the higher clause is able to Sink into the island. The account given there of Path Containment Condition effects crucially hinged on this assumption; if the account sketched in this section is to be pursued, some other way of dealing with those effects will have to be found.

[8] This requirement is reminiscent of the conditions on scope reconstruction imposed by islands; as noted by Longobardi (1987), Frampton (1990b), and Cresti (1995), a wh-phrase extracted from the island cannot undergo reconstruction into the island, though it can reconstruct to positions outside the island and below its eventual landing site. In terms of the theory sketched here, we might conclude that scope reconstruction is limited to positions along Sinking paths.

References

Boyd, John. 1992. Exceptions to island constraints and syntactic theory. Doctoral dissertation, University of Massachusetts, Amherst.

Chomsky, Noam. 1986. *Barriers*. MIT Press, Cambridge.

Chomsky, Noam. 1995. *The Minimalist Program*. MIT Press, Cambridge.

Chomsky, Noam. 1998. Minimalist inquiries: the framework. MITOPL

Chung, Sandra, and James McCloskey. 1983. On the interpretation of certain island facts in GPSG. *Linguistic Inquiry* 14, 704-713.

Cresti, Diana. 1995. Extraction and reconstruction. *Natural Language Semantics* 3:79-122.

Frampton, John. 1990a. The fine structure of wh-movement and the proper formulation of the ECP. ms., Northeastern University.

Frampton, John. 1990b. Parasitic gaps and the theory of *wh*-chains. *Linguistic Inquiry* 21.49-78.

Grewendorf, Günther, and Joachim Sabel. 1996. Multiple specifiers and the theory of adjunction: on scrambling in German and Japanese. *Sprachwissenschaft in Frankfurt Arbeitspapier* 16.

Hasegawa, Nobuko. 1984. On the so-called "zero pronouns" in Japanese. *The Linguistic Review* 4:289-341.

Jacobson, Pauline. 2000. Extraction out of *tough*. Snippets 1.

Kuno, Susumu. 1973. *The structure of the Japanese language*. MIT Press, Cambridge, MA.

Longobardi, Giuseppe. 1987. Extraction from NP and the proper notion of head government. Alessandra Giorgi and Giuseppe Longobardi, eds., *The syntax of noun phrases*, 57-112, Cambridge University Press, Cambridge.

Manzini, Maria Rita. 1991. *Locality*. MIT Press, Cambridge, Mass.

Marantz, Alec. 1994. "The two modes of A-bar binding are not tied to the argument/adjunct distinction." ms., MIT.

Nishigauchi, Taisuke. 1990. *Quantification in the theory of grammar*. Kluwer, Dordrecht.

Ochi, Masao. 1997. On the nature of relativization in Japanese. *Proceedings of CONSOLE V*.

Phillips, Colin. 1996. Order and structure. Doctoral dissertation, MIT.

Phillips, Colin. To appear. Linear order and constituency. *Linguistic Inquiry*.

Richards, Norvin. 1997. What moves where when in which language? Doctoral dissertation, MIT.

Richards, Norvin. 1999. Dependency formation and directionality of tree construction. *MITWPL 34: Papers on morphology and syntax, cycle two*, edited by Vivian Lin, Cornelia Krause, Benjamin Bruening, and Karlos Arregi. MITWPL, Cambridge, MA.

Richards, Norvin. To appear. *Movement in language: interactions and architectures*. Oxford University Press, Oxford.

Saito, Mamoru. 1985. Some asymmetries in Japanese and their theoretical implications. Doctoral dissertation, MIT.

Saito, Mamoru. 1994. Additional-wh effects and the adjunction site theory. *Journal of East Asian Linguistics* 3:195-240.

Tanaka, Hidekazu. 1998. Conditions on logical form derivations and representations. Doctoral dissertation, McGill University.

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Passive and Patient Topicalization: Beyond the Common View

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1 - Passive and Topicalization: The Common View

The most widespread functional characterization of the passive involves the notion of topicalization of the patient. Siewierska 1984 describes this view of the passive in the following way:

> "The passive is seen as a topicalizing construction for **it places a non agentive NP in unmarked subject-topic position**. The agentive passive simultaneously locates the agent in the focal position of the clause". (Siewierska 1984: 222, my emphasis)

Whatever notion of topic one resorts to (topic as given information, or as "what the clause is primarily about"), the statement above is grossly incomplete and one-sided: it rules out as functionally ill-formed several examples of passives with non-topical subjects, and, as we will see later, a rather high percentage of such passives can be found in texts. We are not claiming, of course, that the topicalizing characterization of the passive function is completely wrong: undoubtedly, in a considerable number of cases, a cluster of features such as animacy, prominence, givenness or accessibility is associated with the passive subject. None of these features alone, however, is able to explain why the passive occurs, nor is the cluster of them. We claim that there is more to the passive than the simple promotion of the patient argument to the subject/topic position, and that we must deal with this complexity of meaning before attempting to define the passive function in discourse.

1.1 - The multidimensionality of the passive: Givón 1981

The above view of the passive as a topicalizing strategy is shared by Givón 1981, who assigns the passive two more functions. Givón talks about functional domains rather than simply of functions, because syntactic functions very commonly are not atomic or totally discrete: these domains are to be conceived

of as *continua*. The passive, in its capacity of assigning the clausal-topic function to a non-agent argument, is a member of the **domain of topic identification**, ranging from easiest to most difficult; this domain includes strategies such as Left-Dislocation, Topicalization, Right-Dislocation, Y-Movement. It also belongs to the **domain of detransitivization**, sharing this property with statives, middles and reciprocal/reflexives. Moreover, passivization can easily be shown to be a member of yet another functional domain, that of **impersonalization or agent suppression**. However, it is the topicalizing character of the passive which motivates its inclusion among the syntactic strategies examined by Givón and his colleagues in the papers collected in Givón 1983[1]. This idea of the passive as a multidimensional phenomenon is not infelicitous, and is able to capture the multiple functions of passive constructions in discourse; however, Givón does not single out a semantic core of the construction, which could explain its variety of uses; he only defines domains that are (at least theoretically) independent from syntax and universal and then lists a number of structures that codify points in the domains, both in a given language and cross-linguistically. In this framework, the function of any of these syntactic structures cannot be defined independently from their position on the scale with respect to the other structures belonging to the same scale. As it has been pointed out by Prince 1997, we should reject such a coarse-grained view of discourse functions in grammar: each syntactic structure has often more than one discourse function, these functions are to be posited at a more specific level than the functional domains posited by Givón, and very often no one-to-one iconic correspondence between structures and functions can be singled out. Moreover, none of the domains (agent suppression, detransitivization, topic identification) to which the passive belongs can be said to capture "the" meaning of the passive in an exclusive way. All that is found is a correlation between functions and structures, and notions such as that of agent demotion or detransitivization are too vague to be assumed as the semantic core of anything.

1.2 - The inadequacy of the common view

The above approach to passivization fails to account for the fact that in a significant number of cases passive constructions do not signal that patient is topical, and neither do they topicalize the patient by recalling it from the previous discourse and making it the object of subsequent predication. Consider the following examples:

(1) *Door de Nederlandse Spoorwegen en het Ministerie van Verkeer en Waterstaat* ***wordt een onderzoek uitgevoerd*** *naar het gebruik van de in mei 1993 geopende zuidtak Amsterdam [Dutch (from Cornelis 1997, p. 26)]*

Lit: "By the Netherlands Railways and the Department of Public Works **is a survey carried out** into the use of the in May 1993 opened South Branch Amsterdam"

(2) *Anche oggi è una bella giornata, scandita da un itinerario che ripercorre quello papale: prima dai frati francescani, custodi della Terra Santa, con una visita al Santo Sepolcro e al Golgota, doni scambiati (ai frati* ***era stato recapitato il libro del leader azzurro****), poi nella residenza che ospiterà Giovanni Paolo nella sua prossima visita [Italian].*

"Today is also a good day, characterized by an itinerary which parallels the Pope's itinerary: first, (Berlusconi drops in on) the Grey Friars, custodians of the Holy Land; then he visits the Holy Sepulchre; finally they all exchange presents (**the book by the "Blue" leader had [already] been delivered to the Friars**), and he visits the residence that will host Pope John Paul during his next visit"

(3) *[...] Según la doctora, que mantuvo una entrevista personal con Pinochet el 5 de enero, el general tiene problemas para recordar hechos lejanos en el tiempo, seguir argumentos, y dar instrucciones apropriadas a sus abogados. Estas conclusiones fueron explicadas el pasado dia 12 de enero por Jack Straw al comparecer en la Cámara de los Comunes, y, mas tarde, el 18 de enero, en una carta dirigida a Amnistia Internacional. En los pasajes citados por Tayler* ***se mencionan tambien los ataques menores que habría sufrido Pinochet en septiembre y octubre de 1999, y los efectos sobre la neuropatía diabética que padece****. La defensa de Pinochet [...] envió ayer una carta al ministerio del Interior advirtiendo sobre posibles filtraciones del informe en España, según pudo saber EL PAÍS [Spanish].*

"According to the doctor who met Pinochet privately on January 5th, the general can hardly recall facts, follow discussions or give appropriate instructions to his lawyers. These conclusions were drawn by Jack Straw when he talked at the House of Commons on January 12th, and later on, on January 18th, in a letter mailed to Amnesty International. In the passage quoted by Tayler, **the minor attacks suffered by Pinochet in September and October 1999 are mentioned, along with the effects of these on his diabetic neuropathy**. Yesterday, according to information received by EL PAIS, Pinochet's lawyers sent a letter to the Ministry of Internal Affairs to warn them about possible leaks of the report in Spain"

In (1), the agent (*de Nederlandse Spoorwegen*) is unused while the subject (*een onderzoek*) is brand-new; this means that the latter ranks lower than the former on the familiarity scale proposed by Prince 1981, i.e. it is less familiar than the agent: if we define topicality in terms of familiarity or discourse-oldness, the subject of (1) cannot be considered topic. Moreover, as Cornelis (1997, p. 26) points out, "the same relative word order of the participants, as well as the order of the participants in relation to the verb and the other constituents, can be kept intact in the (two) active counterpart(s)", i.e., if topicality is to be defined in terms of word order, no differences in agent and patient topicality between (1) and its active counterpart may be postulated. In example (2), taken from our

Italian corpus, the subject of the passive sentence is a brand-new entity, and the clause is parenthetic: this means that the passive subject is absent from both the preceding and the following discourse span. Similarly, in example (3), taken from our Spanish corpus, the underlying patient of the *se*-construction (a passive-like construction, cf. Hidalgo 1994) is a brand-new entity. In all these examples, passive subjects cannot be considered to be topicalized in any way, inasmuch as they are absent from the discourse context and they do not acquire topic properties - i.e., they do not become cataphorically persistent - by virtue of being subjects of an alleged topicalizing construction. To sum up, the major problem with functional analyses of passive construction is that they depend too heavily on the relation of passive with its active counterpart; in particular, the choice of a passive vs an active clause is commonly seen as a matter of relative prominence of the main participants: in the passive, **the patient would be more prominent than the agent**[2]. We must admit that it is not difficult to find plenty of evidence for the relative prominence shift that takes place in some passive clauses, and that this shift is supported also by psycholinguistic experiments (but cf. Cornelis 1997, p. 18 for a discussion). However, even a simple analysis of passive occurrences in texts should reveal that "prominence of the patient" fails to account for the meaning and the function of the construction in all its occurrences.

1.3 - Passives and topic identification

Let us have a closer look at the role of the passive within the domain of topic identification. In Givón 1981, 1983 several grammatical devices are arranged along the following scale ranging from a very easy topic identification to a very difficult one:

> Zero Anaphora > Unstressed/Clitic Pronoun > Indipendent/Stressed Pronoun > R-Dislocated Definite NP > Definite NP > L-Dislocated Definite NP > **(Passive subject)** > Y-Movement > Indefinite NP > Clefted/Focused/Contrasted NP

This *continuum* includes grammatical devices in which the NP is crucially involved: devices at the top of the scale are used to refer to easily identifiable entities, whereas structures at the bottom are used when the entity is more difficult to retrieve, thus usually signaling a contrast or a discontinuity with the previous discourse. The scale is based on the measurement of the persistence and the referential distance of the topic of a sentence *s* (encoded by one of the devices above). **Persistence** is measured in terms of number of clauses to the right of a sentence *s* "in which the topic/participant continues an *uninterrupted presence* as a *semantic argument* of the clause, an argument of whatever *role* and marked by whatever *grammatical means*" (Givón 1983, p. 15). If a grammatical device strongly topicalizes an element, this element is also likely to rank high on

the persistence scale (i.e. it is likely to be the object of some subsequent predication). The referential distance measures the distance between the current and the previous occurrence in the discourse of a referent and is expressed in terms of number of clauses to the left of the one under analysis in which the referent does not appear. The closer it occurs, the easier is the identification of the referent. This method is inadequate for several reasons. We do not dwell on the problems it raises, for the sake of brevity. Let us point out, however, that some of the grammatical devices belonging to the scale are structurally very simple, involving only a feature of the NP, e.g. its definiteness, while others are more complex and subsume simpler strategies (for instance, a dislocated NP can be both definite and indefinite, cf. Prince 1997) or crucially involve phenomena such as word order. Since it involves (at the very least) verb marking, word order, and some degree of agent demotion, the passive should be kept apart from the other devices. Moreover, Givón's measurement of referential distance does not inform us about the newness/oldness of referents in a significant way; instead, we claim that continuity should be intended as reflecting a referent's degree of oldness rather than its distance from its previous occurrence. It cannot be denied, of course, that distance, though overestimated in Givón 1983, plays a critical role in the retrievability of a referent. However, referential distance is measured by Givón in a purely "physical" and simplistic way: 1 point is assigned to each clause in the immediately preceding segment in which the referent does not appear. It has been claimed that it is necessary to consider not only the place where the referent appears, but also its **syntactic status** in that sentence and the **rhetorical relations** occurring between the *n* sentences which separate the two occurrences[3]. The measurement of the decay rate is simplistic too; referents in foregrounded clauses are very likely to persist in the subsequent discourse, whereas if a clause is backgrounded, the decay rate of its referents will be very high. In Givón 1983, no attempt is made to keep track of the background-foreground distinction in measuring persistence of a referent.

1.4 - Passivization and inversion: Givón 1994

In some languages passive agents are not fully demoted and their referents appear to be persistent: in the Spanish periphrastic passive, for instance (cf. Hidalgo 1994), the agent is very often expressed and cataphorically persistent. The papers collected in Givón 1994 try to explain this behavior of some passive-types in different languages claiming that these passives are to be considered an instance of the so-called **inverse voice**. Inverse voice is characterized by high topicality for both agent and patient (the patient is more topical than the agent but the agent retains considerable topicality). The interpretation of *ser*-passives as instances of inversion turns out to bear on weak structural grounds: *ser* + past participle is structurally a passive and is different from an inverse as it appears in languages with an obviate-proximate marking. In these languages, the

underlying object is not syntactically promoted and the agent usually governs agreement (the object does not acquire subject properties, but is moved in first position and marked as proximate). Roland's chapter on Modern Greek (cf. Roland 1994) can be taken as an example of this theoretical weakness: the author claims that in Modern Greek a functional inverse exists. All the examples of inverse voice she quotes are rather cases in which the pronominal object is fronted (no examples are provided where the object is a full nominal):

(4) **Tin**	ide	na	ton	plasiazi
Her/ACC	saw-3SG	SUB	him/ACC	approach-3SG
He saw **her** approach him				

Moreover, she postulates that the basic word order of the inverse voice is OVS and that this particular word order is to be seen as a sort of grammatical marking of the inverse voice in Greek: this is simply wrong, given the fact that in other Indo-European languages it is very common for a clitic pronoun to be placed before the verb. As Palmer 1994 states, in extreme cases of inverse systems the animacy hierarchy plays a crucial part, while in Modern Greek the variation in word order seems to be limited to a small subset of arguments, i.e. full nominals versus pronouns, and the animacy hierarchy as a whole plays no role. Moreover, following Palmer 1994, we believe that change of word order alone should not be considered a marker of any voice, for "in many languages it is used, independently of passivization, for the purpose of topicalization" (Palmer 1994, p.132). Moreover, in Modern Greek the position of arguments in the sentence is relatively free and virtually any element may be fronted if topical: in the case of clitic pronouns this fronted position has simply become grammaticalized. The tentative explanation of passive clauses showing high agent topicality as inverse clauses is thus based on an *a priori*: given that passive, as it is functionally defined, codifies high patient topicality and low agent topicality, these "abnormal" passives are labeled inverses.

2 - Passives and Topicalization: beyond the Common View

We must conclude that passives and topicalization are only marginally related: the topicalizing function of the passive is to be thought of as a consequence of its more general meaning, **and not its primary function;** the contradictory and confused data arising from textual counts concerning passive subjects (cf. Givón 1983, 1994[4]) show that the working hypothesis which led authors as Givón to assume that the primary function of the passive is to be located within the domain of topic identification must be rejected.

2.1 - A Construction Grammar approach to passive

Our approach differs from other current approaches to passive function in some important respects: first of all, we aim to account for the multidimensionality of passive construction (both within a single language and cross-linguistically) by postulating a semantic core of the construction which is able to explain all its uses. In order to achieve this goal, we challenge the alleged nonbasicness of the passive construction (cf. Goldberg 1995 and below) and we provide an explanation for the main dimensions of variation of passive constructions. Second, we will outline a very simple semantic network which accounts for the semantic distinctions and pragmatic functions encoded by passive structures.

2.1.1 - Outlining an abstract meaning for passive constructions

Goldberg 1995 states that **sentence-level constructions are meaningful linguistic symbols,** i.e. independently from the items that fill the slots of the construction, the template itself carries a peculiar, though rather abstract, meaning. Each of the basic-level constructions she examines in her book is said to designate a that is basic to human experience. However, not all clause-level constructions encode humanly relevant scenes: Goldberg considers the passive as a nonbasic clause-level construction, along with other constructions which serve the purpose of argument topicalization[5]. We do not agree with this classification as far as the passive is concerned. Though not addressing the question of the basicness of the scene described by the passive here, we claim that the passive meaning can be said to designate a scene basic to human experience as well as the other constructions analyzed in Goldberg 1995, i.e. it is to be defined **in cognitive terms rather than in terms of information packaging**. Which abstract meaning may we then assign to the passive construction? Following Shibatani 1985, we assume that the passive has an agent defocusing function, but we adopt a slightly different perspective, arguing that the passive meaning is **eminently pragmatic**: a passive construction is to be considered **an instruction to the hearer that a different perspective** (in the sense of Langacker 1987) **from the normal one should be taken**. The normal unmarked perspective is the perspective of the agent/subject of the two-participant transitive event in which there is a transmission of force from the subject to the object, construed as respectively starting point and endpoint of this transmission. In our view, the passive is underspecified with respect to which perspective must be taken, but it nevertheless signals that the main actor's perspective should not be taken. This is the abstract meaning of the passive construction alluded above. Let us say, in informal and pretheoretical terms, that among the entities that are left onstage (i.e. all the entities but the agent), the speaker can choose to focus on the patient, thus displaying empathy towards him, or can choose to embrace the maximal scope of what is onstage, thus conceptualizing the event as a whole, i.e. as a bare happening, with little or no

internal structure. In order to get such an event-prominent reading, the main actor's perspective has to be demoted or deleted completely. Of course, the meaning differences found between different passive constructions within a single language and cross-linguistically deserve a thorough explanation, along with the tendency for some passive constructions to strongly imply the presence of the causer.

2.1.2 - The Dutch passive

According to Cornelis 1997, in the Dutch passive the causer is always there, even if it is not syntactically codified, whereas in English the causer is only evoked and potentially every passive has a simple-state (adjectival) reading. Cornelis argues that a different role of the conceptualizer is to be postulated. In Dutch the passive signals that the causer's point of view should not be taken. This negative signal leaves behind a gap: the passive does not specify whose perspective should be taken. In English, instead, there is a positive relationship between the conceptualizer and the trajector (= the patient), i.e. the patient perspective should be taken. According to Cornelis, this difference is related to a difference in the lexical items that form the skeleton of the two constructions: she states that the "building blocks" (the meaning of the passive auxiliary, the preposition usually conveying the agent, etc.) the two languages use in their different passive constructions are likely to affect the overall meaning of the construction. Dutch *worden* "become" is a processual verb which yields a more "dynamic" reading of the passive, i.e. a stronger involvement of the causer, whereas a stative passive with auxiliary *be* keeps the agent definitely apart from the onstage region. As far as the preposition introducing the agent is concerned, Cornelis argues that the core spatial meaning of *door* in Dutch is "intermediary", whereas *by* means "located in the neighbourhood of". This also would account for the stronger involvement of the causer in Dutch. We believe that these generalizations are too narrow and that a more complex view of the event structure of passive sentences is to be introduced. To say that a given passive construction in a given language corresponds either to the English type or to the Dutch type, depending on the lexical items forming the skeleton of the construction, would lead us to reject all instances in which a passive sentence in that language does not conform to that representation. This is the case with Italian periphrastic passive: it is often the case that the same periphrastic construction (with the very same "building blocks") is used both when the patient is the local topic in order to signal that the agent is less important (or central), and when the event is conceptualized as an undifferentiated whole (i.e. with no patient topicalization), as the following Italian examples demonstrate:

(5) *Gli brucia la famosa gaffe sulle leggi razziali, lo si capisce per come risponde: "Mio nonno ha dovuto firmare le leggi razziali perché* ***sono state firmate*** *prima di lui*

dal Gran Consiglio e il Gran Consiglio rappresentava l'Italia in quel momento. Le leggi ***erano fatte*** *da Mussolini..."*

The memory of the gaffe about racial laws still rankles in him; as his answer demonstrates: "My grandfather was forced to sign the racial laws, for they **had already been signed** by the Big Council, and the Big Council represented Italy at that moment. The laws **were promulgated** by Mussolini"

(6) *Qui la polizia ha trovato materiale edilizio e macchine agricole rubate per un valore di 80 milioni. Alcuni dei mezzi* ***erano stati reimmatricolati*** *con nuove targhe, e la polizia ora sta lavorando per capire come sono riusciti a farlo.* ***Sono stati trovati e sequestrati anche 11 cavalli****. L'indagine prosegue ora via Internet per controllare più aziende possibili nelle due regioni dove la banda aveva avviato il redditizio traffico.*

Here the police came across some stolen building material and agricultural machines amounting to an overall value of 80 million. Some of the machines **had been rematriculated** with new number-plates, and the police is now trying to understand how they did manage to do this. Also 11 horses **were found** and sequestrated. The inquiry is now prosecuted through the web, in order to inspect as many companies as possible in the two areas where the gang had begun the rich traffic.

In (5) above the passive subject (*le leggi razziali*) is the topic of the discourse span. The periphrastic passive is used here to demote the agent, which would be the subject/topic of the unmarked active clause, in order to maintain discourse coherence by avoiding topic shifts. In (6), the subject of the second passive is a brand new entity and the clause adds background information to the conjoined clause. (i.e. it does not belong to the main narrative line). The situation is thus more fuzzy than the one depicted by Cornelis.

2.1.3 - The working hypothesis: a two-level analysis of passive constructions

The problem with Cornelis' analysis is that she singles out only one level of cross-linguistic variation among passive constructions. We agree with her that the lexical elements that form the passive template in a language can to a certain extent make the passive construction in that language more capable of expressing one of the meanings sketched above (i.e. patient focusing vs bare event focusing). However, we argue that **a two level articulation of the passive meaning** is needed in order to account for meaning differences such as the ones in examples (5)-(6): the first level is the level of lexical meaning of the elements forming the template of the construction, and corresponds to Cornelis' "building blocks". This level is mainly responsible in determining the tendency for a given construction to preferentially convey one of the two meanings sketched above (i.e. patient focusing vs bare event focusing). Given semantic distinctions such as those in (5)-(6), which are present in spite of the same "building blocks" used in the two examples, we introduce a higher level of analysis concerning the ontological properties of the **lexical elements that instantiate the construction**

(i.e. that fill in its slots) **along with other linguistic components** (such as, for instance, tense/aspect/modality, and word order) **likely to affect the passive meaning**. In the final section of this paper, we will see some of these linguistic elements in action in Italian and Spanish.

2.1.4 - A semantic network for passive meaning

A more structured representation of the semantics of passive construction informally sketched above is now introduced. It will be conceived of as a semantic network we call the **network of demotion**. This simple network has two poles which share the basic meaning "agent's perspective not central". In the first pole, the perspective shifts to another participant (usually the patient, but also the theme in ditransitive constructions), whereas in the second pole no perspective is taken, and there is a decreasing of the referential strength of all the participants (i.e. their persistency, in terms of Givón 1983), until the "semantic limit" (cf. Kirsner 1976) of the focusing of the bare event is reached. The semantic core shared by these two poles is the unimportance of the agent's perspective. Whereas in the first pole of this network this demotion takes place in function of the promotion of the salient argument (i.e. the patient), in the second pole, this agent demotion takes place in order to increase focus on the pure occurrence of the event by eliminating the main actor, which, in the normal, transitive construal of the event, is the one whose perspective is to be taken. This network is different from Givón's functional domains in that it defines only a syntactic structure. Moreover, no specific prototype effects are introduced, i.e. even a single linguistic feature of those introduced above as belonging to the second level of analysis of passive constructions may override other features in favouring one of the two meanings described above. This semantic network also differs from the representation of passive meaning sketched by Cornelis (cf. Cornelis 1997: 89) in that it allows a single construction in a given language to range over its two poles. The working hypothesis we want to validate in our corpus analysis is that different kinds of passives (both within a single language and cross-linguistically) **displace on one pole or the other of the network of demotion**, according to the two levels of articulation of passive meaning introduced above: first, the inherent semantics of a passive construction (first level) determines its tendency to lean towards one of the two poles, while the lexical elements that fill the slots of the construction along with tense/aspect and word order (second level) determine the actual meaning in a given utterance. For the sake of brevity, we do not examine all the factors alluded above in the next section. For a complete discussion of the correlations between passive and tense/aspect/modality, cf. Sansò (forthcoming), where it is argued that this two-level articulation is what makes the passive a sentential phenomenon very similar to aspect[6]. Several European languages have been analyzed in order to validate our working hypothesis[7]. The results have widely confirmed our view. In the next section we present some Spanish

and Italian data, for these two cognate languages differ from one another in some important respects.

2.1.5 – Passive constructions in Italian and Spanish

The Italian constructions we have examined are of two kinds: a periphrastic one, formed with *essere* "to be" + past participle and a so-called impersonal construction with *si*. This construction is also used in reflexive, reciprocal and impersonal clauses. We will not address the question of the relatedness of these different meanings here (but cf. Sansò forthcoming). *Si*-construction is much less widespread than the periphrastic construction and than its Spanish counterpart with *se*. This is not without reasons, as will be argued below. In our data, only half of the overall occurrences of passive constructions has a textually evoked subject (which is also the topic of the passive clause). The different distribution of subject types in periphrastic passive vs *si*-passives is striking, as is the difference between passive subjects in SV and VS periphrastic constructions: generic, non-referential or scarcely familiar subjects are the majority in the *si*-passive and in the VS periphrastic passive. This leads us to assume that the Italian periphrastic passive can be split up into two different constructions, characterized by different word order (see Table 1). In the SV construction the patient is very often the topic of the construction, or a very familiar inferrable entity, whereas in the VS periphrastic construction the subject is very often a non-animate, plural or uncountable and scarcely familiar entity, as in (2) and (6) above.

Type of passive subject	Number and percentage of VS sentences with this type of subject	Number and percentage of *si*-passives with this type of subject	number and percentage of SV sentences with this type of subject
Textually evoked – discourse topic	15 (14.01%)	27 (32.53%)	256 (66.14%)
Inferrable	41 (38.31%)	16 (19.27%)	88 (22.73%)
Unused	8 (7.47%)	1 (1.2%)	6 (1.55%)
Brand-new	43 (40.18%)	39 (46.98%)	37 (9.56%)
Total	107 (100%)	83 (100%)	387 (100%)

Table 1 - Distribution of different types of subject in periphrastic passive (both SV and VS) and *si*-passive in Italian; results widely exceed chance ($\chi^2 = 135.42$; d.f. = 4; $p < 0.1$)

In order to test the statistical validity of our findings, we performed the same textual counts on a sample of active sentences, analyzing the discourse oldness of subject and object. The results are displayed in Table 2 below. If we look at the percentage of brand-new active objects and then compare it with the percentage of brand-new passive subjects of both *si*-passive and VS periphrastic passive, the evidence is quite striking: active objects are discourse-older than (at least) some of the passive subjects (i.e. the entities bearing the same semantic role of patient). This is a further demonstration that there is more to passive than

a mere promotion of arguments. To put it in other words, passives have their own meaning which is absent from active sentences. When using a passive construction such as the VS construction or the *si*-construction, the speaker conceptualizes the event as a whole, thus decreasing the referential properties of the passive subject, which is very often a backgrounded referent, i.e. not a referent under whose entry the information conveyed by the clause is stored.

	Active subjects	Active objects
Textually evoked/Discourse Topic	195 (65%)	96 (32%)
Inferrable	48 (16%)	99 (33%)
Unused/Unexpected	36 (12%)	27 (9%)
Brand-new	21 (7%)	78 (26%)
Total	300 (100%)	300 (100%)

Table 2 - Subjects and objects in a sample of 300 active clauses; results widely exceed chance (χ^2= 85.44; d.f. = 3; $p < 0.1$)

As for referential distance (which has been measured by taking into account rhetorical relations among discourse spans), no striking difference can be found between active objects and passive subjects (i.e. between semantically comparable entities): we therefore conclude that distance plays no role in the choice of a passive vs an active sentence. This is consistent with our view of passive constructions: as we have already said, the passive can by no means be considered to be a topicalizing strategy, at least not in its basic meaning; this implies that referential distance, which is surely important for truly topicalizing constructions (such as the ones included in Givón's scale), is not relevant at all in the case of passives. Turning our attention to the persistence rate of passive referents, we have found a general tendency for passive referents to rapidly decay from the subsequent discourse. This is consistent with the fact that generally passive constructions are part of the background, but there are significant differences if we look at the behaviour of the three kinds of passives we have singled out above with respect to persistence. The argument of the *si*-passive and the subject of the VS periphrastic passive are more likely to decay than the subject of periphrastic SV passive, as Table 3 demonstrates.

	si-passives		SV passives		VS passives	
Average persistence	0	81.93%	0	67.89%	0	77.77%
rate	1-2	18.07%	1-2	21.81%	1-2	22.22%
	>2	0%	>2	10.29%	>2	0%

Table 3 - Average persistence rate of passive subjects in the three constructions investigated (in terms of number of clauses to the right); results widely exceed chance ($\chi^2 = 23.05$; d.f. = 4; $p < 0.1$)

The Spanish data also confirm our hypothesis. If we look at the distribution of the two kind of passives (periphrastic and *se*-construction), the difference between Spanish and Italian is striking. Whereas in Italian the impersonal construction appears to be less widespread than the periphrastic passive, its

Spanish correlate is even more used than the periphrastic construction. The reason for this different behaviour is that in Spanish word order evidently plays no role within the periphrastic construction (the VS periphrastic construction is very scarcely attested, around 2% of the periphrastic passives analyzed), and the *se*-construction represents the only way to convey a bare happening reading, as the following examples demonstrate:

(8) *Durante estos 18 años ha residido en México, llegando a vivir de limosna en algunas épocas.* ***Fue detenido*** *el pasado 7 de julio por llevar documentación falsa y* ***entregado*** *a las autoridades españolas.*

During these 18 years, he lived in Mexico, sometimes reduced to beggary. **He was arrested** on July 7th because he presented false documents and **he was handed over** to the Spanish authority.

(9) *También temían que* ***se abandone la búsqueda de los tripulantes*** *o sus cuerpos cuando* ***se consideren nulas las posibilidades de supervivencia****. El Zafir era el primer buque mercante en el que se había embarcado Juan Bautista Abuelo Marcote, de 22 años, el más joven de los tripulantes.*

At the same time, they were afraid that the search for the crew **was to be abandoned**, once the possibility of survival **was considered low**. *El Zafir* was the first commercial ship in which Juan Bautista Abuelo Marcote, 22 years old, the youngest of the crew, embarked.

Inanimate, scarcely familiar, plural and generally new entities are preferentially found in *se*-constructions. Therefore, this construction should not be considered a topicalizing strategy. This pattern had already been noticed by Hidalgo 1994. As we have seen above, Hidalgo 1994 further claimed that the Spanish periphrastic passive should be considered an instance of the **inverse voice**. We claim that there is no need to consider this passive an instance of inverse voice in order to account for the presence of agents in this kind of passive: it follows directly from our description that passive agents are likely to be present especially in those passive constructions which preferentially express patient prominence. The reason is straightforward: whereas in bare event prominent passives the speaker demotes or deletes the agent in order to focus on the event, the demotion that takes place in patient prominent passives is function of the higher salience of the patient with respect to the agent. i.e. this demotion is not total and the agents retain some referential strength (i.e. they may be recalled in the subsequent discourse). To sum up, in Spanish a polarization between two different constructions takes place, whereas in Italian this polarization is located within a single construction by exploiting word order as a crucial factor in determining the meaning of the construction. The *si*-construction in Italian appears then less widespread than its Spanish counterpart because it is in competition with the VS periphrastic construction.

Notes

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[1] Even if, at least theoretically, the three domains conspire to define the passive function to the same extent, Givón 1981 seems to suggest that the dimensions of cross-linguistic variation of the passive within the three domains are strictly dependent on the extent to which the patient is syntactically promoted, acquiring subject-topic properties (cf. Givón 1981, p. 168).

[2] A significant exception to this widespread trend in functional linguistics is Simon Dik's idea (cf. Dik 1997: 271) of subject and object as perspective operators. We will not address the issue of the relatedness of the theory we are going to propose here with Dik's theory, but cf. Sansò forthcoming for a wider discussion.

[3] Cf. Grosz et al 1995 and Fox 1987. Taking into account some of Fox' generalizations, we have elaborated a new calculus of structural distance based on rhetorical structure (cf. Sansò forthcoming) that has been used in the analysis of textual data in order to classify the referents of passive subjects and agents according to their discourse-oldness (cf. below).

[4] Given these methodologically weak premises, the data collected in Givón 1983 do not allow us to single out a homogeneous behaviour of passive in discourse, and no conclusion can be drawn about its position on the scale of topic accessibility, as Givón himself admits ("[...] the exact position of passivization along this continuum is not fully clear and may depend in part on the particular passive-type in a language", Givón 1981: 165).

[5] "Nonbasic clause-level constructions such as cleft constructions, question constructions, and topicalization constructions **(and possibly passives)** are primarily designed to provide **an alternative information structure** of the clause by allowing various arguments to be topicalized or focused" (Goldberg 1995: 43, my emphasis).

[6] Needless to say, the two-level articulation we postulate affects the event structure of the sentence, much in the same way as aspectual operators do. We adhere to de Swart & Verkuyl's view (cf. de Swart & Verkuyl 1999), according to whom aspect is a sentential phenomenon characterized by two main dimensions: first, there is the level of the *Aktionsart*, which is a lexical property of verbs, and points to a general shape of the event. At the second level, every verb can be construed as whatever kind of event, and this is determined by the ontological properties of the arguments (cf. well-known alternations such as *John ate a sandwich [accomplishment]/John ate sandwiches [activity]*)

[7] We agree with Andersen 1991 who claims that the passive cannot be defined as a unified cross-linguistically valid category, at least not with oversimplifications. Therefore, our claims are to be considered valid only for the European passive type.

References

Andersen, Paul Kent. 1991. *A New Look at the Passive*. Frankfurt am Main: Lang.

Cornelis, Louise H. 1997. *Passive and Perspective*. Amsterdam-Atlanta: Rodopi.

Dik, Simon C. 1997. *The Theory of Functional Grammar - Part 1: The Structure of the Clause* (K. Hengeveld, ed.). Berlin-New York: Mouton de Gruyter.

Fox, Barbara. 1987. *Discourse Structure and Anaphora. Written and Conversational English*. Cambridge: Cambridge University Press.

Givón, Talmy. 1981. "Typology and Functional Domains", *Studies in Language*, 5(2): 163-193.

Givón, Talmy (ed.). 1983. *Topic Continuity in Discourse: a Quantitative Cross-Language Study*. Amsterdam-Philadelphia: John Benjamins.

Givón, Talmy (ed.). 1994. *Voice and Inversion*. Amsterdam-Philadelphia: John Benjamins.

Goldberg, Adele E. 1995. *Constructions: a Construction Grammar Approach to Argument Structure*. Chicago: University of Chicago Press.

Grosz, Barbara J., Aravind K. Joshi and Scott Weinstein. 1995. "Centering: a Framework for Modeling the Local Coherence of Discourse", *Computational Linguistics*, 21(2): 204-225.

Gundel, Jeanette K., Nancy Hedberg and Ron Zacharski. 1993. "Cognitive Status and the Form of Referring Expressions in Discourse", *Language*, 69 (2): 274-307.

Hidalgo, Raquel. 1994. "The Pragmatics of De-transitive Voice in Spanish: from Passive to Inverse?", in Givón, Talmy (ed.) 1994: 168-186.

Kirsner, Robert. 1976. "On the Subjectless Pseudo-passive in Standard Dutch and the Semantics of Background Agents", in Li, Charles (ed.), *Subject and Topic*: 385-415. Academic Press, New York.

Langacker, Ronald. 1987. *Foundations of Cognitive Grammar*. Stanford: Stanford University Press.

Palmer, Frank R. 1994. *Grammatical Roles and Relations*. Cambridge: Cambridge University Press.

Prince, Ellen F. 1981. "Toward a Taxonomy of Given-New Information", in Cole, Paul (ed.), *Radical Pragmatics*: 223-255. New York: Academic Press.

Prince, Ellen F. 1997. "On the Functions of Left-Dislocation in English Discourse", in Kamio, Akio (ed.), *Directions in functional linguistics*: 117-144. Amsterdam-Philadelphia: John Benjamins.

Roland, Katy. 1994. "The Pragmatics of Modern Greek Voice: Active, Inverse and Passive", in Givón, Talmy (ed.) 1994: 233-260.

Sansò, Andrea. Forthcoming. *The Network of Demotion: A Cognitive Linguistics Account of Passive Constructions*. PhD dissertation to be discussed at the University of Pavia, Italy.

Shibatani, Masayoshi. 1985. "Passives and Related Constructions: A Prototype Analysis", *Language*, 61: 821-848.

Siewierska, Anna. 1984. *The Passive. A Comparative Linguistic Analysis*. London: Croom Helm.

de Swart, Henriette and Henk Verkuyl. 1999. *Tense and Aspect in Sentence and Discourse*. ESSLLI 1999 lecture notes (http://esslli.let.uu.nl/Courses/swart-verkuyl.html).

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Onset Breaking and Sympathy: *t*-insertion in Korean Revisited

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1 Introduction

It has been argued that when two Korean nouns make a compound, *t* is inserted between the stems and either triggers tensification of the following obstruent or undergoes nasalization when preceded by a nasal. In the paper, I first contend that there is neither *t*-insertion nor sequential nasalization of *t*, partly following Cook (1984). I further propose that gemination by means of onset breaking rather than *t*-insertion applies between the stems in order to make the prosodic head heavy. Finally, I account for the case of tensification with no apparent trigger (e.g., inserted *t*) in terms of sympathy (McCarthy 1998, 1999) and argue for Extended Sympathy (Itô and Mester 1997, Davis 1997).

2 *t*-insertion in Korean

As is well-documented (Ahn 1985, Kim-Renaud 1995 among others), in the process of noun compounding in Korean, *t* is inserted between the two stems, and the epenthesized *t* triggers tensification. Hence, as is given in (1), when the first stem ends with a vowel and the second stem begins with a plain consonant, *t* is inserted between the two nouns, and then tensification follows.

(1) *t*-insertion ("+" stands for the stem boundary)[1]

UR	*SR*	*Gloss*	
a) nalu + pæ	na.lut.p'æ	deck + boat	small boat
b) ka + kil	kat.k'il	sides + shoulder	shoulder of a road
c) c^ha + kil	c^hat.k'il	car + road	road for cars
d) c^ha + cip	c^hat.c'ip	tea + house	tea house
e) pata + ka	pa.dat.k'a	sea + shore	seashore
f) co.kæ + sal	co.gæt.s'al	clam + meat	clam meat

In Korean, a plain obstruent gets tensified after an obstruent. Consequently, the inserted *t* in the examples in (1) triggers tensification of the word-initial

obstruent of the second stem, respecting the well-known Korean phonology, tensification .

On the other hand, as Korean does not allow rising sonority over a syllable boundary, respecting the Syllable Contact constraint (Syllable Contact: In any sequence A.B over a syllable boundary, the sonority of A must not be less than that of B: Davis and Shin, 1999, Shin 1997), an obstruent before a nasal gets nasalized as in (2), and the epenthesized *t* is also subject to nasalization before a nasal as in (3). The consequence is that the two consonants over a syllable boundary have proper (e.g., even or falling) syllable contact with respect to sonority.

(2) Obstruent nasalization[2]

	UR	*SR*	*Gloss*
a)	napnita	nam.ni.da	to sprout
b)	matnata	man.na.da	to be delicious
c)	kukmul	kuŋ.mul	broth

(3) *t*-insertion and sequential nasalization

	UR	*SR*	*Gloss*	
a)	k^ho + mul	k^hon.mul	nose + fluid	runny nose
b)	s'ali + mun	s'a.lin.mun	s'ali + door	door made of s'ali
c)	yaksu + mul	yak.s'un.mul	spring water + water	spring water
d)	isa+nal	i.san.nal	moving + day	moving day

We have seen that the alveolar stop *t* is inserted between two nouns when the first noun ends with a vowel. This inserted *t* triggers tensification as in (1) and is realized as a nasal as in (3), respecting Korean phonological regularity.

In the traditional views (Choi 1961, Ahn 1985, Kim-Renaud 1974 among others), it has been argued that such *t*-insertion applies first in the process of noun compounding, and then tensification triggered by the inserted *t* follows as in (4).

(4) Serial Derivation

	/nalu # pæ/	'deck' 'boat'
	nalut # pæ	t-epenthesis
	nalut # p'æ	tensification
	[nalut p'æ]	'small boat'
or	[nalup p'æ]	optional place assimilation

The problem from such traditional analyses as in (4), however, is that they have not answered the basic question: does tensification trigger insertion or insertion trigger tensification? In other words, the previous studies have not mentioned whether *t*-insertion applies first for tensification, or insertion applies

for some other reasons and then tensification results. Also, they have not provided any reasons why *t*-insertion applies if *t*-insertion applied first before tensification.

Furthermore, the following examples in (5) show that in the process of noun compounding, tensification still applies even without a preceding inserted *t*, when the first noun ends with a sonorant consonant.

(5) Tensification applies with no apparent trigger

UR	*SR*	*Gloss*	
a) pom+pi	pom.p'i	spring + rain	spring rain
b) mul+koki	mul.k'ogi	water + fish	fish
c) pul+sæ	pul.s'æ	fire + bird	phoenix
d) tol+tam	tol.t'am	stone + wall	stone wall
e) pam+totuk	pam.t'oduk	night + buglar	buglar
f) tam+pyəlak	tam.p'yə.ɾak	wall + fence	fence
g) san+tiŋsəŋ	san.t'iŋsəŋ	mountain + ridge	mountain ridge

Given the general assumption that a sonorant in Korean does not trigger tensification, the examples in (5) raise a problem in a sense that the onset of the second noun becomes tensified even when it follows a sonorant.

In the paper, I will first contend that gemination by means of onset breaking resulting from constraint interaction applies in Korean, and that the goal of gemination is to make the prosodic head heavy. In addition, based on the case of tensification with no apparent trigger in the process of noun compounding, I will maintain that phonological constraints (Phono-constraints) as well as Input-Output faithfulness (IO-Faithfulness) constraints can be used as selector (ℵ) of ❀-candidates (flowered candidate), following Itô and Mester (1996) and Shin (1999).

3 Insertion or Breaking?

As Cook (1987) points out, the previous analyses of noun compounding in Korean have missed one important fact: the inserted consonant is not *t*. That is, the examples in (1) and (3) that show *t*-insertion "have been misled by the orthographic device (t) which has not only caused hypercorrection and spelling pronunciation, but also misperception" (Cook 1987:360). Hence, actual realization of the examples in (1) and (3) can be rewritten as in (6) and (7) follows. Compare the examples in (1) and (3) and those in (6) and (7), respectively.

(6) Actual output of noun compounds shown in (1)

UR	*SR*	*Gloss*	
a) nalu + pæ	na.lup.p'æ	deck + boat	small boat
b) ka + kil	kak.k'il	sides + shoulder	shoulder of a road
c) c^ha + kil	c^hak.k'il	car + road	road for cars
d) c^ha + cip	c^hac.c'ip	tea + house	tea house
e) pata + ka	pa.dak.k'a	sea + shore	seashore
f) co.kæ + sal	co.gæs.s'al	clam + meat	clam meat

(7) *t*-insertion and sequential nasalization

UR	*SR*	*Gloss*	
a) k^ho + mul	k^hom.mul	nose + fluid	runny nose
b) s'ali + mun	s'a.lim.mun	s'ali + door	door made of s'ali
c) yaksu + mul	yak.s'um.mul	spring water + water	spring water
d) isa+nal	i.san.nal	moving + day	moving day

Such actual realizations in (6) and (7) illustrate that gemination rather than *t*-insertion applies in the process of noun compounding. Hence, all noun compounds in (6) and (7) result in obtaining a geminate in the output.

Based on this view, I propose that there is no consonant insertion, and that what happens, instead, is breaking of an onset in the second stem to make the prosodic head (i.e., coda of the first stem) heavy. This claim, of course, is based on two crucial assumptions; 1) any consonant in the coda is not moraic in Korean and 2) the last syllable of the first stem is the prosodic head. Consequently, if we assume that any consonant cannot be moraic in Korean, the only way to make the prosodic head heavy, not violating DEP that prohibits consonant insertion (McCarthy and Prince 1995) is to split a consonant and produce a geminate that is moraic in nature. Additionally, given the second assumption that the last syllable of the first stem is the prosodic head that draws stress, I maintain that the goal of such gemination resulted from such consonant breaking is to make the stressed prosodic head heavy. This claim of gemination in order to obtain an additional mora is a well-known universal tendency and is also supported by the fact that a syllable tends to become heavy if stressed. Some examples from Korean are the following.

(8) Gemination in other examples

a) Emphatic speech gemination (Cho and Inkelas 1994:51)

ap'a → [a.p'á] *or* [áp.p'a] 'dad'

ik'i → [i.k'í] *or* [ík.k'i] 'moss'

b) Attaching a verbal ending

pap'ɨta + asə → páp.p'a.sə 'to be busy + because'

c) Underlying tensed consonant in the second word

so+k'ori → [so.k'o.ri] but [sok.k'o.ri] is not an impossible output.

'ox + tail'

The examples in (8a) and (8b) are monomorphemic and have a stress in the second syllables. However, when we move the stress to the first syllable in the examples in (8a), the stressed syllable becomes heavy by means of gemination. Similarly, when its stress is moved to the first syllable in (8b) because of the verbal ending "-asə" that means "because", gemination tends to be applied. As pointed out earlier, when the first consonant of the second stem is not a plain consonant, gemination does not apply. However, even in this case as shown in (8c) (tensed consonant, k'), the first stem with a heavy prosodic head with a geminate is not impossible.

Second, and more importantly, it is worth noting that when the second stem begins with an onsetless syllable as in (9), t-insertion does not apply.

(9) Failure of *t*-insertion application

UR	*SR*	*Gloss*	
a) pata + oli	pa.da.o. ɾi	sea + duck	sea crow
b) k^{h}o + usɨm	k^{h}o.u.sɨm	nose + laughing	sneering
c) k'æ + al	k'æ.al	sesame + grain	a grain of sesame
d) c^{h}a + an	c^{h}a.an	car + inside	the inside of a car

(data (c) and (d) from Choi (1927:710))

This raises a serious problem in the traditional approaches. In fact, such examples in (9) have been considered as exception. However, the analysis by means of onset breaking for a heavy prosodic head accounts for the failure of t-insertion application empirically since an onsetless syllable of the second stem lacks an onset to be split even though a heavy prosodic head is preferred. This provides crucial evidence that what happens in the process of noun compounding in Korean is not insertion but breaking of an onset.

In the following sections, I will account for the examples given so far, relying on constraints and their interactions.

4 Constraints and Their Interaction

I first propose the constraint, *[obs]$^{2}_{\text{syllable}}$ to account for Korean tensification. This constraint is a type of self-conjunctive constraint, applying only to a local area (See Alderete 1997 and Itô and Mester 1996 for more about the notion of local conjunction and see Smolensky 1993, 1995, 1997, Alderete 1997 for the notion of constraint conjunction). Here, the local area refers to the syllable boundary. As a consequence, this constraint can be stated as follows.

(10) *[obs]$^{2}_{\text{syllable}}$: Two plain obstruents cannot be adjacent over a syllable boundary.

Hence this constraint prohibits a sequence of two plain obstruents over a syllable boundary.

Given that the last syllable of the first stem should be heavy by means of gemination, I propose another constraint that requires the prosodic head to be heavy as in (11).

(11) HeadHeavy: A prosodic head must be heavy.

As mentioned earlier, the notion of 'head' here is different from morphological head and simply refers to the last syllable of the first stem.

Even though gemination by means of splitting an onset of the word-initial syllable of the second stem is a possible way to obtain a mora, it results in violation of the constraint 'Integrity' that prohibits consonant breaking as described in (12) below.

(12) Integrity : No element of S_1 has multiple correspondents in S_2.
(McCarthy and Prince 1995, 1998)

Integrity keeps a segment from being split, while HeadHeavy prohibits a nongeminate head of the first stem. Consequently, in Korean, HeadHeavy is crucially ranked over Integrity, allowing gemination by means of onset breaking. However, given that no phonological process applies when the first syllable of the second stem lacks an onset as in (9), HeadHeavy cannot be undominated.

Using the constraints and their ranking introduced so far, the tableau in (13) accounts for the case of gemination and tensification in the formation of noun compounds shown in (6).

(13) Multiple correspondence by gemination in the formation of Korean noun compounds

/nalu + p_1æ/	*[obs]$^2_{syll}$	DEP	Head Heavy	Ident [c.g.]	Integrity
a. na.lu.pæ			*!		
b. na.lu.p'æ			*!	*	
c. na.lut.pæ	*!	*	*		
d. na.lu.p'æ			*!	*	
e.☞ na.lup$_1$.p'$_1$æ				*	*
f. na.lup$_2$.p'$_1$æ		*!		*	

Candidate (c) fatally violates *[obs]$^2_{syllable}$ because of the sequence of plain obstruents over a syllable boundary and thus is ruled out. Candidate (a), (b) and (d) violate HeadHeavy since the last syllable of the first stem that is the head lacks a geminate and thus is not heavy. Between candidates (e) and (f),

both of which satisfy *[obs]$^2_{syllable}$ and HeadHeavy, candidate (e) is chosen as the best since it respects DEP even though it violates Integrity with the two correspondents of /p_1/ in the output.

The tableau in (14) accounts for the case shown in (3) and shows that neither nasalization nor nasal insertion applies to those examples.

(14) Case of nasalization

/yaksu + $m_1$ul/	*[obs]$^2_{svll}$	DEP	Head Heavy	Ident [c.g.]	Integrity
a. yak.s'u.mul			*!	*	
b. yak.s'ut.mul		*!	*	*	
c. yak.s'un.mul		*!	*	*	
d.☞ yak.s'um$_1$.m$_1$ul				*	*
e. yak.s'um$_2$.m$_1$ul		*!		*	

Candidate (e) has a geminate, thus respecting HeadHeavy. However, this candidate is eliminated from further consideration since it violates high-ranking DEP as candidate (b)[3] and (c) do. Candidate (a) violates HeadHeavy and thus is ruled out. As a consequence, candidate (d) with a geminate emerges as the optimal output.

With the high-ranking DEP and HeadHeavy and the low-ranking Integrity, the tableaux (13) and (14) have shown that Korean does not allow consonant insertion, and that an onset of the second stem should be split in order to have a geminate and to obtain an additional mora. Hence, even though gemination that results in multiple correspondence violates Integrity that prohibits consonant breaking, it respects high-ranking HeadHeavy that requires the prosodic head heavy and is preferred. The optimal output also respects *[obs]$^2_{syllable}$, following the regularity of Korean phonology.

Relying on the notion of sympathy, section 5 deals with the problematic case where the output has a tensed consonant even without its trigger.

5 Breaking and Sympathy

5.1 Traditional analyses

This section explores interaction between tensification and gemination and finally, relation between a sympathetic candidate and other candidates.

As described earlier, gemination applies when the first noun ends with a vowel and the second noun begins with a plain obstruent. As is generally accepted, sonorants in Korean do not trigger tensification of the following onset. However, in the examples in (15), even though the first noun ends not with an obstruent but with a sonorant consonant, tensification still applies and gemination, of course, does not apply.

(15) Tensification applies with no apparent trigger

UR	*SR*	*Gloss*	
a) pom+pi	pom.p'i	spring + rain	spring rain
b) mul+koki	mul.k'ogi	water + fish	fish
c) pul+sæ	pul.s'æ	fire + bird	phoenix
d) tol+tam	tol.t'am	stone + wall	stone wall
e) pam+totuk	pam.t'oduk	night + buglar	buglar
f) tam+pyəlak	tam.p'yə.ɾak	wall + fence	fence
g) san+tɨŋsəŋ	san.t'ɨŋsəŋ	mountain + ridge	mountain ridge

In the examples, the word-initial consonant of the second noun becomes tensified even though breaking does not apply. These examples are problematic in the two respects. First, the prosodic head is not heavy, presumably violating HeadHeavy. Second, the stem-initial consonant of the second noun gets tensified even without any preceding obstruent.

In the traditional analyses, the problem has been solved by some rules and their ordering as in (16).

(16) Derivation by Renaud (1995:164)

(a) /pom # pi/	'spring'	'rain'
pomt #pi	*t*-epenthesis	
pomt' pi	Obstruent Unreleasing	
pompt'p'i	Tensification	
[pom.p'i]	Consonant Deletion	
(b) /mul # koki/	'water'	'fish'
mult#koki	*t*-epenthesis	
mult'koki	Obstruent unreleasing	
mult'k'oki	Tensification	
mulk'oki	Consonant deletion	
[mul.k'o.gi]	Intervocalic voicing	

Hence, traditional works have posited the inserted *t* in an intermediate level and have argued that *t* is deleted after triggering tensification of the following obstruent as is shown in (16). These analyses, however, are problematic under OT since OT does not posit any intermediate forms or derivations in principle. In the following sections, I will propose that sympathetic faithfulness accounts for such case and will argue for Extended Sympathy.

5.2 Sympathy and ❀-Selector

As McCarthy (1997, 1998) proposed, sympathy is a type of correspondence between candidates. This correspondence relation, which is named flowered (❀)-correspondence, is stated in (17).

(17) ❀-correspondence (McCarthy 1997:9)
❀-correspondence relates (a) designated member of output candidate set to (the) whole set (of candidates). (The) Designated member is (the) most harmonic candidate obeying some specified faithfulness constraint.

Given this notion of co-candidate correspondence, flowered constraints, ❀MAX and ❀DEP that are in regard of the relation between a flowered candidate and an output and between a flowered candidate and an input, respectively can be defined as in (18) based on the basic Input-Output Faithfulness (IO-Faithfulness) constraints, MAX and DEP.

(18) Flowered constraints (McCarthy and Prince 1998)
a) ❀MAX: Every segment in the flowered candidate has a correspondent in the output.
b) ❀DEP: Every segment in the output has a correspondent in the flowered candidate.

In fact, since the advent of Sympathy Theory, one of the key issues has been about ❀-selector that picks up sympathetic candidates. So, McCarthy (1998) claims that only IO-Faithfulness constraints such as MAX and DEP can serve as ❀-selector as stated in (19).

(19) Confinement to $C_{<+F>}$ (McCarthy 1998:18)
Selection of the ❀-candidate $\aleph_F$ is confined to $C_{<+F>}$, the set of candidates that obey the IO-faithfulness constraint F.

However, dealing with several patterns of Ponapean nasal substitution in the process of reduplication, Davis (1997a, b) contends that Base-Reduplicant Correspondence (BR-Correspondence) constraints as well as IO-Faithfulness constraints can also play the role as ❀-selector as in (20) (See Davis (1997a, b) for more details).

(20) Davis (1997a, b): BR-Faithfulness can serve as C.

On the other hand, based on German hypocoristic truncation, Itô and Mester (1997) Shin (1999) based on English hypocoristic truncation claim that even Markedness constraints should act as ❀-selector, proposing so-called "Extended Sympathy" stated in (21).

(21) Extended Sympathy (Itô and Mester 1997:127)
Other types of constraints besides Faithfulness, can serve as C (the constraint determining the sympathetic candidate....)

In the following section, based on the patterns of tensification in noun compounds of Korean, I will maintain that in addition to IO-Faithfulness constraints, Phono-constraints can select ❀-candidates. I will also consider sympathetic correspondence between candidates.

5.3 Extended sympathy

Relying on the notion of sympathy and on the Phono-constraint, HeadHeavy that is described in (11), the tableau in (22) accounts for the case of tensification given in (15).

(22) Extended Sympathy in the formation of noun compounds

/pom.p$_1$i/	*[obs]$^2_{\sigma\sigma}$	❀Ident [c.g.]	*Complex	Ident [c.g]	Inte-grity	Head Heavy
a. pom.pi		*!				*
b. pom.bi		*!				*
c.❀ pomp$_1$.p'$_1$i			*!	*	*	
d. pom.p$_1$p$_1$'i			*!	*	*	*
e.☞pom.p'i				*		*
f. pomp$_1$.p$_1$i	*!	*	*		*	

The constraint tableau in (22) is a combination of two tableaux. That is, the HeadHeavy constraint appeared in the right is the one to choose the sympathetic candidate. By the constraint, candidate (c) is chosen as the flowered candidate. In the tableau, candidate (c) should be chosen as the sympathetic candidate in order to have *pom.p$_1$'i* as the optimal output rather than the hypothetical form **pom.pi*. Then, in order to rule out candidate (a) and to pick up candidate (c) as the sympathetic candidate, it is necessary that the Phono-constraint, HeadHeavy, be used as the authentic sympathetic constraint. This claim is contrary to McCarthy (1998) who proposes to use only IO-Faithfulness constraints as ❀-selector and is similar to Itô and Mester (1997) who argue for Extended Sympathy. Hence, the tableau in (22) clearly shows that as Itô and Mester (1997) and Shin (1998) proposed, even a Phono-constraint can serve as ❀-selector. Hence, in the tableau, given that candidate (c) with the tensed consonant in the second stem is the sympathetic candidate rather than candidate (a) with the plain consonant, candidate (e) which best respects the sympathetic constraint, ❀Ident[constricted glottis], emerges as the winning candidate.

On the other hand, the sympathetic candidate (c) that respects the Phono-constraint further implies that even a flowered candidate is prone to respect phonological regularity of Korean. That is, even though a flowered candidate is not an independent phonological output, it still tends to respect phonological constraints of Korean. This claim is congruent with Shin (1998) where Phono-constraints such as *mb]$_{\text{syllable}}$ can be used as sympathetic constraints in the

process of English hypocoristic formation even though a sympathetic candidate is not an actual output.

6 Summary

In the paper, I proposed that there is neither *t*-insertion nor sequential nasalization in the process of Korean Noun compounding. Instead, I contended that the last syllable of the first stem is the prosodic head that is required to be heavy and thus undergoes gemination by means of onset breaking. These proposals were supported from the facts that a stressed syllable tends to be heavy in Korean, and that *t*-insertion does not apply when the first syllable of the second stem lacks an onset. To conclude, gemination accounts for Korean noun compounding and results from onset breaking. I also showed that a Phono-constraint can be used as a constraint to pick up a flowered candidate. This claim is similar to Itô and Mester (1997), Shin (1999) and partly to Davis (1997a, b) in the sense that other constraints in addition to IO-Faithfulness can serve as a selector of sympathetic candidates and is contrary to McCarthy (1997, 1998). As proposed in Shin (1998) in the process of English hypocoristic formation, application of Phono-constraints to a flowered candidate in the process of Korean noun compounding further implies that even a flowered candidate respects phonological regularity of a given language, thus satisfying a Phono-constraint such as HeadHeavy.

Notes

1. As many Korean phonologists have noted, there are some exceptions to this phonological process as in (1) below.

(1) Exceptions of t-insertion in Korean

	UR	*SR*		*Gloss*	
a)	poli + pat	po.ɾi.pat	*po.ɾit.pat	rye + field	rye field
b)	so + koki	so.go.gi.	*sot.k'o.gi.	cattle + meat	beef

2. Interestingly, Korean has so-called optional *n*-insertion. That is in Korean, *n* is inserted (more precisely, underlying *n* is realized) when an obstruent of the first stem follows either *i* or *y* as in (2). I will not mention this underlying *n*-realization in the paper since as Cook (1984) points out, such *n* is underlying rather than epenthetic as in the examples in (3) show and is not related to *t*-insertion that this paper deals with. Hence, in the examples in (3), we expect to have either *t* or *n* between the two stems. If there were no *n* underlyingly in (3), for example, a further extraordinary explanation would be necessary to account for the epenthesized *l* in the second stem. Consequently, in the examples in (3), underlying *n* is realized as *l* since Korean does not allow the sequence of *ln*. In sum, the examples in (2) provide evidence that such *n* is underlying rather than epenthetic.

(2) Realization of underlying *n* (I)

a) Noun compounds (Data from Han 1993:53)

UR		*SR*		*Gloss*
cip + il	ci.bil	*or*	cim.nil	house work
sæk + yuli	sæ.gyu.ɾi	*or*	sæŋ.yu.ɾi	colored glass
pat^h + ilaŋ	pa.di.laŋ	*or*	pan.ni.ɾaŋ	ridge of a field
namu + ip^h	na.mu.nip	*or*	na.mun.nip	tree leaves

b) Prefix + Root

UR		*SR*		*Gloss*
hot + ipul	ho.di.bul	*or*	hon.ni.bul	thin comforter
cit + ikita	ci.di.gi.da	*or*	cin.ni.gi.da	to mash
mak + il	ma.gil	*or*	maŋ.nil	miscellaneous work

(3) Realization of underlying *n* (II)

UR	*SR*	*Gloss*
a) mul + yak	mul.lyak	liquid medicine
b) al.yak	al.lyak	pill (ball + medicine)
c) pal.yəl	pal.lyəl	fever
d) hal+il	hal.lil	things to do (to do + work)
e) səul+yək	sə.ul.lyək	Seoul Station

3. Precisely speaking, candidate (b) crucially violates the Syllable Contact constraint that prohibits a sequence of rising sonority over a syllable boundary and is ranked high in Korean (See Davis and Shin 1999, Shin 1997). In the paper, I will not talk more about the Syllable Contact constraint since it does not play an important role in the process of noun compounding.

References

Alderete, John. 1995. "Winnebago Accent and Dorsey's Law", *UMOP*, 18. 21-51.

Alderete, John. To appear. "Dissimilation as Local Conjunction", *NELS* **27**.

Cook, Eung-Do. 1987. "Sai-sios is a Geminate Consonant", *Harvard Studies in Korean Linguistics* **II**, 360-366.

Choi, Hyen-Bae. 1961. *Uri Malbon.* (Grammar of Our Language) (4th revised edition of the 1929 original). Seoul, Chungeumsa.

Cho, Young-mee Yu and Sharon Inkelas. 1994. "Post-Obstruent Tensification in Korean and Geminate Inalterability", In Young-Key Kim-Renaud eds., *Theoretical Issues in Korean Linguistics*. 45-60. CSLI

Davis, Stuart. 1997a. "A Sympathetic Account of Nasal Substitution in Ponapean Reduplication", *Phonology at Santa Cruz* **5**, 15-28.

Davis, Stuart. 1997b. "The Flowering of Optimality Theory: Ponapean Nasal Substitution and the Problem of Intermediate Forms", Unpublished ms., Indiana University.

Davis, Stuart. 1996. "Motivating the Syllable. Unpublished ms.", Indiana University.

Davis, Stuart and Seung-Hoon Shin. 1999. "The Syllable Contact Constraint in Korean: An Optimality-Theoretic Analysis", *Journal of East Asian Linguistics* **8**.4, 285-312

Han, Eunjoo. 1994. "A Prosodic Analysis of Korean Compounding", In Young-Key Kim-Renaud eds., *Theoretical Issues in Korean Linguistics*, 61-76. CSLI.

Itô, Junko and Armin Mester. 1996. Rendaku I: "Constraint Conjunction and the OCP", Handout from Kobe Phonology Forum, 1996.

Itô, Junko and Armin Mester. 1997. "Prosodic Interludes and Sympathy Effects: Examples from Germanic Phonology". In Viola Miglio and Bruce Morén eds., *University of Maryland Working Papers in Linguistics* 5, 117-138.

McCarthy, John. 1997. "Sympathy and Phonological Opacity", Paper presented at Hopkins Optimality Theory Workshop/University of Maryland Mayfest 1997.

McCarthy, John. 1998. "Sympathy and Phonological Opacity", Unpublished ms., University of Massachusetts.

McCarthy, John and Alan Prince. 1995. "Faithfulness and Reduplicative Identity", *UMOP* 18, 249-384.

McCarthy, John and Alan Prince. 1998. "Faithfulness and Identity in Prosodic Morphology", Unpublished ms., University of Massachusetts and Rutgers University.

Prince, Alan. 1990. "Quantitative Consequences of Rhythmic Organization", *CLS 26. Vol 2: Parasession on the Syllable in Phonetics and Phonology*, 355-398.

Shin, Seung-Hoon. 1997. *Constraints within and between Syllables: Syllable Licensing and Contact in Optimality Theory*, Seoul, Taehaksa. (Printed edition of Ph.D. dissertation, Indiana University)

Shin, Seung-Hoon. 1998. "Extended Sympathy and English Hypocoristic Truncation", *Proceedings of '98 Western Conference on Linguistics.*

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Wh-Scrambling and QP-Scrambling

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1 Quantifier Scrambling: Problem Visited

On the basis of such examples as (1), a number of linguists have reported that in Japanese and Korean, the relative scope of two Quantifier Phrases (QPs) are rigidly fixed in accordance with their order at the surface (Hoji 1985, Kim 1991, Sohn 1995, Miyagawa 1997).

(1) a. Japanese
dareka-ga daremo-o aisiteiru no
someone-Nom. everyone-Acc. love
'Someone loves everyone.'

b. Korean
nwukwunka-ka nwukwuna-rul saranghanta
someone-Nom. everyone-Acc. love
'Someone loves everyone.'
[Unambiguous: someone > everyone]
(Sohn 1995: 146)

The only available reading in the examples above is the one that corresponds to the linear order of the two quantifiers; thus, the existential quantifier subject *dareka* (J) / *nwukwunka* (K) 'someone' takes scope over the universal quantifier object *daremo* (J) / *nwukwuna* (K) 'everyone,' but not vice versa. The reading that results is 'there is a person and this person loves everyone.' The standard assumption in the study of Korean and Japanese concerning the rigid scope is that these languages, unlike English, which allows scope ambiguity in a sentence equivalent to (1) (May 1985, Aoun and Li 1993), observe a "rigidity condition," a term found in Huang 1982:

(2) Huang 1982: 220
Suppose A and B are both QPs or Q-NP's (quantified NP's) or Q-expressions, then if A c-commands B at S-structure, A also c-commands B at LF.

Given the rigidity condition, the rigid scope in (1) is expected, for the examples can only have the LF configuration in (3a), not in (3b) (abstracting away from details of the structures).

(3) a. [someone ... everyone]
b. [everyone ... someone]

Scrambling poses an immediate problem for the Rigidity condition, however. Consider (4) in Korean, taken from Sohn 1995:

(4) nwukwuna-rul$_i$ nwukwunka-ka t_i saranghanta
everyone-Acc. someone-Nom. love
'everyone$_i$, someone loves t_i.'
(i) 'For everyone$_i$, there is a person who loves him$_i$.'
(everyone > someone)
(ii) 'There is a person$_i$ who loves everyone$_i$.'
(someone > everyone)

In (4), the universal quantifier object has undergone scrambling past the existential quantifier subject, and it gains any scope with respect to the lower quantifier. Note in (5) that Long-Distance (LD) scrambling also exhibits scope freedom:

(5) nwukwuna-rul$_i$ na-nun [nwukwunka-ka t_i sarang-ha-n-ta-ko]
everyone-Acc. I-Nom. someone-Nom. love-do-Pres.-Dec.-Comp

sayngkak-ha-n-ta
think-do-Pres.-Dec.

(i) 'For everyone$_i$, I think that there is a person who loves him$_i$.'
(everyone > someone)
(ii) 'I think that there is a person$_i$ who loves everyone$_i$.'
(someone > everyone)

In (4-5), a wide scope construal of the scrambled quantifier, glossed in (i), conforms to the Rigidity condition (2). However, the other scope construal, glossed in (ii), needs an explanation because the interpretation associated with

the scope is the one that actually reverses the surface c-command relation of the two quantifiers.

It is noted in the literature that existential quantifiers are semantically ambiguous between a presuppositional/specific construal and a non-presuppostional/nonspecific construal, unlike universal quantifiers, which are unambiguously presuppositional/specific (see Milsark 1974, Kratzer 1997, and Reinhart 1997). Since the constructions in (4-5) above all involve an existential quantifier subject *in-situ*, one may reasonably link the alternating scope observed here to the semantics of the existential quantifiers. On this view, if the speaker has a particular person in mind, then the existential quantifier subject *in-situ* gains a wide scope construal of (ii); if not, then the existential subject will be interpreted *in-situ*, taking a narrow scope reading of (i).[1]

Although plausible, this solution is not general enough. Consider (6):

(6) a. nwukwunka-rul$_i$ nwukwuna-ka t_i sarang-ha-n-ta
someone-Acc. everyone-Nom. love-do-Pres.-Dec.
(i) 'For someone, everyone loves him.' (someone > everyone)
(ii) 'Everyone has someone that he loves.' (everyone > someone)

b. nwukwunka-rul$_i$ na-nun [nwukwuna-ka t_i sarang-ha-n-ta-ko]
someone-Acc. I-Nom. everyone-Nom. love-do-Pres.-Dec.-Comp

sayngkakhanta
think

(i) 'For someone$_i$, I think that everyone loves him$_i$.'
(someone > everyone)
(ii) 'I think that everyone has someone he loves.
(everyone > someone)

What is peculiar to such examples as (6) is that these examples involve universal quantifiers that take wide scope readings over the fronted existentials. Universal quantifiers differ from existentials; they are semantically fixed as presuppositional/specifics and restrict their scope within the clause they are part of (see Heim 1982 and Hornstein 1995 for the clause-boundedness of universal quantifiers).[2] These examples are therefore not susceptible to the kind of analysis offered above for (4-5), constituting genuine counter evidence to the Rigidity condition (2). In closing this section, I would like to address (7) to show a general property of QP-scrambling.

(7) The Scope Ambiguity Induced by Quantifier-Scrambling (SAIQ)
In Korean (and Japanese as well) scope ambiguity arises whenever a QP undergoes scrambling over another QP in a sentence.

2 Relevance of Traces in QP-Scrambling

A brief sketch of Kim's (1991) Chain Scope theory will be useful for the current discussion. Kim pays his attention to scope contrast in such examples as (8) (data originally from May 1985:45):

(8) a. Who *t* thinks (that) everyone saw you at the rally?
b. Who do you think that everyone saw *t* at the rally?

Example (8a) is unambiguously interpreted as a single *wh*-question, in which *who* only takes broader scope over the universal quantifier *everyone*. By contrast, (8b) exhibits ambiguity, allowing a distributive question as well as a single *wh*-question. The distributive question, a reading that reflects a wide scope construal of *everyone*, cannot be attributed to QR due to the clause-boundedness of the universal quantifiers. This scope construal, however, is explicable if a trace created by *wh*-movement counts. On this assumption, the wide scope construal possibility of *everyone* in (8b) is a consequence of the structural configuration in which the embedded subject *everyone* c-commands the trace of *who* left inside VP. Using this and other sorts of empirical data, Kim integrates the role of a trace into the definition of the Chain Scope, a core principle of his scope theory.

(9) Chain Scope $=_{df}$ a set of nodes
(i) that are c-commanded by an operator α, and
(ii) that dominate at least one member of the chain of α

Along with this, Kim assumes the so-called the 'Topic Parameter' in (10) to account for the scope contrast between non-scrambled constructions and scrambled constructions.

(10) The Topic Parameter (p. 123)
Every matrix clause in Chinese type languages [Chinese, Japanese, and Korean] has a topic position that must be filled overtly at S-structure.

Take (1b) and (4), for example, to see how the Chain Scope correctly derives a desired result in scope relation. The non-scrambled (1b) and the scrambled (4) are reproduced below as (11a) and (12a), respectively, with their relevant S-structure configurations in the (b)s.

(11) a nwukwunka-ka nwukwuna-rul saranghanta
someone-Nom. everyone-Acc. love
'Someone loves everyone.'
[Unambiguous: someone > everyone]

b. [$_{CP}$ someone$_i$ [$_{IP}$ t_i [$_{VP}$ everyone love]]]

(12) a nwukwuna-rul$_i$ nwukwunka-ka t_i saranghanta
everyone-Acc. someone-Nom. criticized
'Everyone$_j$, someone criticized t_j.'
[Ambiguous: everyone > someone, someone > everyone]

b. [$_{CP}$ everyone$_i$ [$_{IP}$ someone [$_{VP}$ t_i V]]]

In (11b), the LF of the non-scrambled sentence, the subject *nwukwunka* 'someone' occupies a topic position. On the other hand, in (12b), the LF of the scrambled sentence, the scrambled object *nwukwuna* 'everyone' appears in the topic position. A crucial difference between the non-scrambled/unambiguous (11b) and the scrambled/ambiguous (12b) is that in the former every member of the chain formed by the moved subject *nwukwunka* asymmetrically c-commands the object *nwukwuna in-situ*, whereas the same c-command relation does not hold in the latter. Kim relates this to his Chain Scope (9), contending that only those quantifiers whose chain scope dominate the other can have a wide scope construal. In (11b), the chain scope of *nwukwunka*, which is IP, dominates the object *nwukwuna*; consequently, the subject quantifier *nwukwuna* takes a wide scope construal. On the other hand, in (12b), the chain-scope of the scrambled object *nwukwuna*, which is a set of [IP, VP], does not dominate the subject quantifier *nwukwuna*; concomitantly, either the scrambled universal quantifier or the existential quantifier subject has a broader scope construal.

On Kim's scope theory, rigidity or ambiguity of scope is a matter of a chain relation (computed in terms of the Chain Scope). In this system, scope ambiguity is to arise whenever a quantifier crosses over another quantifier to form a non-dominance chain scope. As such, it applies to both local scrambling and LD-scrambling in an indiscriminative manner. See (13), an S-structure configuration of (6b), where the object QP *nwukwunka* 'someone' has LD-scrambled across the subject QP *nwukwuna* 'everyone.'

(13) [$_{CP}$ someone$_i$ [$_{IP}$ I [$_{VP}$ [$_{IP}$ everyone [$_{VP}$ t_i love] think]]]

In (13), the chain-scope of the scrambled object *someone* is matrix IP, VP, embedded IP, and VP. This Chain Scope does not dominate *everyone* in subordinate IP; ambiguity thus ensues, as desired. This account has another desirable consequence – that is, examples such as (4-5), where an existential

quantifier stays *in-situ* while taking wide scope over a universal quantifier in the scrambling position, need not be treated as a special case. This is so because the Chain Scope applies indifferently to what type of an expression is *in-situ* or has undergone scrambling. By treating (4-5) on a par with those in (6), the Chain Scope theory achieves a unified account for the SAIQ (7), a general property of quantifier scrambling.

In sum, Kim's Chain Scope theory, a viable candidate of a principle of scope assignment, makes crucial reference to a trace left behind by QP-scrambling. If his analysis is correct, the following should hold:

(14) A trace is crucial in QP-scrambling (for the purpose of scope interpretation).

3 *Wh*-Scrambling: Systematic Counterevidence to the Scope Theory

Although the Chain Scope theory well accounts for scope ambiguity related to QP-scrambling, *wh*-scrambling poses systematic counterevidence to this theory. As Kim himself recognized (p. 248),[3] an interrogative sentence such as (15) does not display scope ambiguity expected under his scope theory.

(15) Japanese
Nani-o daremo-ka Max-ni *t* kaimasita ka?
what-Acc. everyone Max-Dat bought Q
'What did everyone each buy each for Max?'
[Unambiguous: what > everyone]
(Kim 1991)

In (15), the *wh*-object *nani* has scrambled across the universal quantifier subject *daremo*. This example is structurally equivalent to (12) on the natural assumption that a *wh*-phrase and a quantifier land at the same site after scrambling. Despite the structural similarity, the interrogative (15) does not display scope ambiguity, unlike (12). The interrogative (15) permits only a single question reading in which a particular thing is being asked such that everyone bought it for Max. It does not allow a family-of-question reading. Thus, only (16a) but not (16b) can be an appropriate answer to (15).

(16) a. (Everyone bought) a flower.
b. Jean bought a sweater; Sarah bought a photo frame; and Brian bought some toys.

Let us apply Kim's Chain Scope to the interrogative (15):

(17) $[_{CP}$ what$_i$ $[_{IP}$ everyone $[_{VP}$ t_i V]]]

In (17), the chain-scope of the moved *wh*-phrase is IP and VP, and it does not dominate the quantifier subject in IP. We would then expect (15) to be ambiguous, parallel to the instance of QP-scrambling (see the LF of (12) in (12b)). However, this is not the case.

In Son 2000, on the basis of scope contrast as in (18), I proposed that *wh*-scrambling does not leave a visible trace at LF. *Wh*-scrambling might leave a trace (as imposed by the Projection Principle or the θ-criterion), but the trace acts as though invisible at the interpretational level LF.

(18) Korean

a. neo-nun kakkakuy haksayngtul-eykey mues-ul cwuet-ni
you-Nom each students-Dat what-Acc gave-Q
(i) 'What did you give to each student?' (each student < what)
(ii) 'For each student, what did you give to him?' (each student > what)

b. mues-ul neo-nun kakkakuy haksayngtul-eykey *t* cwuet-ni
what-Acc you-Nom each students-Dat gave-Q
(i) 'What did you give to each student?' (each student < what)
(ii) * 'For each student, what did you give to him?' (each student > what)

Example (18a) is a question involving *in-situ wh*-word *mues* 'what,' and this sentence displays scope ambiguity; *mues* and the quantified NP *kakkakuy haksayngtul* 'each student' freely take on any type of relative scope relation.[4] On the other hand, (18b) is a question formed by *wh*-scrambling; this sentence yields only a wide scope construal of the *wh*-word *mues*. The rigid scope of (18b), in contrast with the ambiguous scope of (18a), is expected if we assume that only the scrambled *wh*-phrase, not its trace, participates in scope computation. On this analysis, the rigid scope comes as a result of interpreting the *wh*-word in its overtly pronounced position from which it c-commands the quantified NP.

The hypothesis of 'no visible trace' with *wh*-scrambling supplies an immediate explanation for the unambiguity of an interrogative sentence such as (15). Reconsider (17), the structure of (15). Here the scrambled *wh*-word dominates the QP *in-situ*, leading to a wide scope construal of the *wh*-word. On the other hand, the trace of *wh*-scrambling, t_i, is invisible, by hypothesis. Since

there is no corresponding configuration, the absence of an inverse scope reading follows. The point of discussion is,

(19) A trace/copy of *wh*-scrambling acts as though invisible (for the purpose of scope interpretation).

As the reader may notice, (19), viz., the absence of a visible trace with *wh*-scrambling, stands in sharp contrast with that of QP-scrambling advanced in (14). An obvious question arising here is, why such asymmetry holds between the two categories.

4 Checking Principle as an Answer to the Asymmetry

I would like to propose that Lasnik's (1993) explanation of the following contrast, (a) sentences versus (b) sentences in (20-21), provides a plausible answer to the question raised immediately above in the preceding section.

(20) a. * Who thinks that who, I like?
b. Who thinks that pictures of whom, I like?
(Lasnik and Uriagerka 1988)

(21) a. * Anyone does not take this course.
b. ? Students of any of the philosophy professors do not take this course. (Lasnik 1993)

Wh-movement from Topic to the Spec of CP in (20a) is banned for some reason. *Who* in Topic is consequently left without having its [*wh*]-feature checked. This invokes Full Interpretation of Chomsky 1995 to be violated, with an unchecked feature remaining at LF. The grammaticality of (20b), on the other hand, indicates that the [*wh*]-feature in Topic has somehow been read off. A similar pattern is noticeable in (21). The subject *anyone*, a Negative Polarity Item (NPI), in (21a), remains unlicensed at LF, as opposed to the fairly acceptable NPI within a subject in (21b).

Lasnik (1993), on the basis of this sort of data, citing R. Lee 1992, remarked that a checking position must be preserved, which I refer to as 'The Checking Position Preservation Principle (CPPP),' embodied in (22):

(22) The Checking Position Preservation Principle
A checking position must be preserved at LF.

Given the principle (22), the (un)grammaticality of (20-21) is now explicable. In (20a), *wh*-movement from Topic to Comp renders a feature checking position,

Topic, empty. The *wh*-word in (20b), on the other hand, is embedded in a larger NP. The *wh*-movement in this case, accordingly, does not make Topic vacant: a residue still remains in Top after *wh*-movement (which is driven by a [*wh*]-feature checking). The contrast in (20) thus follows. The same logic holds in (21). The subject NPI in the ill-formed (21a) cannot be lowered to some position where it can be licensed by the negation. In the well-formed (21b), on the other hand, it can, because the lowering does not vacate a subject position, which is a feature checking position.

Returning to the asymmetry between QP-scrambling and *wh*-scrambling with regard to trace (in)visibility, note first that a systematic paradigm appears between *wh*-phrases and quantifier phrases in Japanese and Korean. (23) and (24) below illustrate this:

(23) Japanese

dare	'who'	dare+ka	'someone'
		dare+mo	'everyone'
nani	'what'	nani+ka	'something'
		nani+mo	'everything'
doko	'where'	doko+ka	'somewhere'
		doko+mo	'everywhere'
itu	'when'	itu+ka	'sometime'
		itu+mo	'always'

(24) Korean

nwukwu	'who'	nwu(kwu)+nka	'someone'
		nwukwu+na	'everyone'
mues	'what'	mue(s)+nka	'something'
		mues+ina	'everything'
eti	'where'	eti+ nka	'somewhere'
		eti+na	'everywhere'
encey	'when'	encey+nka	'sometime'
		encey+na	'every time'

What is essential to the paradigm above is that a *wh*-phrase is monomorphemic, while a QP is bimorphemic. (A QP consists of a free morpheme *wh* and a bound morpheme relating to the interpretation of quantifiers.) Extending the CPPP (22) to a morphemic level, this entails that a QP can undergo reconstruction whereas a *wh*-phrase cannot. A QP can do so because a scrambling position can still have a residue after scrambling. Embedded construal of a scrambled quantifier, a semantic effect of an LF trace, thus is predicted. In contrast, a *wh*-phrase is prohibited from LF reconstruction, since if lowering were allowed, a scrambling

position, which is checking position, would be vacated, resulting in violation of the CPPP. The absence of a scrambling trace associated with a *wh*-phrase is thus predicted, in principle.

To conclude, we have found in this paper that (a) the CPPP is actively at work in scrambling languages, and that (b) morphological composition plays a pivotal role in the LF differences between QP-scrambling and *wh*-scrambling with regard to interpretability of their traces.

Notes:

* I am indebted to Yafei Li, Mürvet Enç, Yasu Sasahira, and the audience at WECOL 2000 for comments, suggestions, and judgments on data.

[1]Scope freedom entertained by the existential quantifiers has a direct consequence for an otherwise puzzling example like (i) in Korean.

(i) Korean
nwukwuna-ka nwukwunka-rul saranghanta
everyone-Nom. someone-Acc. love
'everyone loves someone.'
[Ambiguous: everyone > someone, or someone > everyone]

The example (i) is minimally different from (1b) in that the existential quantifier and the universal quantifier change their grammatical positions of subject and object. Surprisingly, the example (i) displays apparent ambiguity in scope interactions, in contrast with (1b). The alternating scope here, particularly, the inverse scope of *someone* > *everyone*, might be taken as a consequence of the meanings of existentials, rather than the result of a syntactic operation.

[2] A universal quantifier may extend its scope to a higher clause; nonetheless, it is unable to take scope over a finite clause. See the minimal pair of (i a) and (i b) below, excerpted from Johnson 2000:

(i) a. Somebody believes everyone to be kind.
[Ambiguous: somebody >< everyone]
b. Somebody believes that everyone is kind.
[unambiguous: somebody > everyone]

The crucial feature of the examples in (6) ((6b), in particular) is that these examples involve finite clauses and the universal quantifiers *in-situ* take scope beyond the finite clauses.

[3] Kim (1991) states, "these cases constitute a problem not only to the present theory [Kim's Chain Scope theory] but to the existing theories of quantification as well" (p. 248).

[4] In (18a), the *in-situ wh mues* 'what' takes scope over *kakkakuy haksangtul* 'each student,' which occurs in a structurally higher position. This indicates that *wh*-phrases in Korean (and Japanese as well) undergo syntactic *wh*-movement (crossing over *kakkakuy haksangtul*).

References:

Aoun, J. and Y.-H. A. Li. 1993. "*Wh*-Elements in Situ: Syntax or LF?" *Linguistic Inquiry* 24: 199-238.

Heim, I. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Doctoral dissertation, University of Massachusetts, Amherst.

Hoji, H. 1985. *Logical Form Constraints and Configurational Sstructures in Japanese*. Doctoral dissertation. University of Washington.

Hornstein, N. 1995. *Logical Form: From GB to Minimalism*. Oxford and Cambridge: Blackwell.

Huang, C.-T. J. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Doctoral dissertation. MIT.

Johnson, K. 2000. "How Far Will Quantifiers Go?" *Step by step: essays on minimalist syntax in honor of Howard Lasnik*, eds., by Roger Martin, David Michaels, and Juan Uriagereka.

Kim, S.-W. 1991. *Chain Scope and Quantificational Structure*. Doctoral dissertation. Brandeis University.

Kratzer, A. 1997. "Scope or pseudoscope? Are there wide-scope indefinites?" In Susan Rothstein, ed., *Events in grammar*. Dordrecht: Kluwer.

Lasnik, H. 1993. "Lectures on minimalist syntax," *University of Connecticut Working Papers in Linguistics*. University of Connecticut, Storrs.

Lee, R. 1992. "Reconstruction and the checking theory," Paper presented at *the 67th Annual meeting of the Linguistic Society of America*.

May, R. 1985. *Logical Form: Its Structure and Derivation*. Cambridge: MIT Press.

Milsark, G. 1974. *Existential Sentences in English*. Doctoral dissertation. Cambridge, Mass. MIT Press.

Miyagawa, S. 1997. "On the Nature of *Wh*-Scope," Ms., MIT.

Reinhart, T. 1997. "Quantifier scope: how labor is divided between QR and choice functions," *Linguistics and Philosophy* 20: 335-397.

Sohn, K.-W. 1995. *Negative Polarity Items, Scope, and Economy*. Doctoral dissertation. University of Connecticut.

Son, G.-R. 2000. Scrambling, Reconstruction, and the Checking Principle. Doctoral dissertation. University of Wisconsin-Madison.

Plural in German: A Test Case for Late Insertion

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1 Introduction

This paper presents a new attempt to find an answer to an old problem, which has never been sufficiently resolved. How does the native speaker of German know, which plural morpheme has to be attached to which particular noun? At first glance, this question seems trivial. However, linguists working on German morphology, phonology, and syntax have tried repeatedly, with the help of various frameworks, to uncover a pattern in the behavior of the plural suffixes in German. The main problem, when trying to determine which plural suffix occurs on a particular noun, is twofold. On the one hand, the regular behavior of the plural suffix can be determined depending on particular features of the noun: gender, and syllable structure. On the other hand, taking a closer look, the number of exceptions to the rules is so high that it is difficult to classify them as exceptions. If these rules with all their exceptions were truly the basis of plural suffixation in German, one would predict that its acquisition by first language learner would continually be full of errors. This clearly not the case. Clahsen et al. (1992) and Phillips & Bouma (1980) have demonstrated that after a phase of overgeneralizations, children switch to a correct plural suffixation within a few weeks. Therefore, we have two options. The first, and the least satisfactory, we list all the exceptions as separate entries in the lexicon. The second path, which I will pursue in this paper, is to try to find features and/or feature combinations, which determine the behavior of the insertion of the plural suffix.

In this paper, I will discuss what a framework that proposes a late insertion model can contribute to the problem outlined above. I will show how Distributed Morphology as proposed in Halle & Marantz (1993) and subsequent work may provide the means to solve a problem that is caught in the dilemma of mixing two modules of grammar, phonology and morphology, in the lexicon. Distributed Morphology provides a model that separates these two modules and makes clear statements on how the interface between the modules of grammar is designed.

The next section will briefly outline what traditionally has been shown to determine the plural in German. The third section will discuss analyses and the framework specific problems of lexicalist frameworks, with Lexical Phonology as proposed by Kiparsky (1982) as an example. Section 4 gives a brief outline of the model of Distributed Morphology and the particular issues it raises with regard to the plural in German. Finally, section 5 will develop an analysis within a late insertion model and the distinct issues. I will demonstrate that, although a complete analysis is not entirely possible within the scope of this paper, Distributed Morphology can lead the way out of an age-old problem that suffered from unclearly defined interface relations between the modules of grammar.

2 The Data

German nominal number inflection consists of five plural morphemes, including a zero suffix. Only three of them can occur with an Umlaut of the stem. One suffix occurs with epenthetic *schwa*.[1] Apart from suffixation on the noun, plural is also encoded on the determiner. The examples in (1) show the definite determiner. Indefinite nouns do not have a determiner in the plural in German. German nouns are distinguished by gender, which is demonstrated through the definite determiner in the singular. The gender distinction disappears in the plural.

1. ***der***: masc., ***die***: fem., ***die***: plural., ***das***: neuter

	Singular	**Plural**	**Translation**
-∅ (+Umlaut)	der Daumen	die Daumen	the thumb/thumbs
	die Mutter	die Mütter	the mother/mothers
-e (+Umlaut)	der Hund	die Hunde	the dog/dogs
	die Kuh	die Kühe	the cow/cows
	das Fest	die Feste	the party/parties
-er	der Leib	die Leiber	the body/bodies
(+Umlaut)	das Huhn	die Hühner	the hen/hens
(e)n	der Bauer	die Bauern	the farmer/farmers
	die Straße	die Straßen	the street/streets
	das Bett	die Betten	the bed/beds
-s	das Deck	die Decks	the deck/decks
	der Uhu	die Uhus	the eagle-owl/eagle-owls
	die Mutti	die Muttis	the mother/mothers

2.1 Phonological and Morphosyntactic Conditions for Plural Suffixation

Traditionally, the conditions for plural suffixation are described as a combination of morphosyntactic and phonological features. The determining morphosyntactic feature is gender, where masculine and neuter nouns usually pattern

together. The deciding phonological features are structure of the last syllable, number of syllables, and last phonological segment. The following rules apply:[2]

2. Plural Suffixation Rules[3]

a. **masculine/neuter** nouns with two syllables, where the closed last syllable contains a [ə], have zero plural
   Exceptions:
   Bauer-n (masc.) *farmers; Muskel-n* (masc.) *muscles,*

b. **masculine/neuter** nouns with any number of syllables, where the closed last syllable does not contain a [ə] take *-n, -e,* or *-er*

c. **masculine/neuter** nouns with any number of syllables, where the last syllable is open, take *-n, -er,* or *-s*
   Exceptions: *Käse-Ø* (masc.) *cheeses*

d. **feminine** nouns ending in a closed syllable take *-n*
   Exceptions: *Kräft-e* (fem.) *strengths; Töchter* (fem.) *daughters; Wänd-e* (fem.) *walls; Mütter* (fem.) *mothers*

e. **feminine** nouns ending in an open syllable take *-n or s*

The above rules demonstrate clearly that, although we can make predictions as to what choice of plural suffixes we can expect, only in two cases (rule a and d), we can make a clear prediction as to which particular plural suffix is selected. With every other rule, the German speaker can choose between at least two plural suffixes. With lexical rules, which take into account both morphosyntactic and phonological conditions, the choice is still open. The next section will briefly illustrate how the dilemma could be solved in a rule-based lexicalist model.

3 Lexical Phonology

Strict lexicalist approaches have been more or less successful in solving the dilemma of the German Plural. One of the most satisfactory solutions has been provided by Lexical Phonology as proposed by Kiparsky (1982). The model proposes that lexical rules are ordered with respect to the kind of morphological process. According to Kiparsky (1982), different levels apply depending on the degree of regularity of the morphological process in a particular language.

Wiese (1988) applies Kiparsky's model with respect to the plural in German. Ordered rules within the lexicon have the least regular process as starting point, listing all the processes necessary for the less predictable processes. In Wiese's analysis, plural inflection happens on the same level with derivational processes but before compounding. The analysis is based which plural suffixes can attach to the first member of a nominal compound (cf. also Clahsen et al. 1992).

3. Wiese (1988)

Level 1	Irregular inflection	all other plural forms except *-s*
	Derivation I	
Level 2	Compounding	*Hund-e+hütte*
		dog-pl+hut
	Derivation II	(-n plural)
Level 3	Regular inflection	(-s plural)

However, this model is not without problems. First, it is not at all clear whether the affix attached to the first member of the compound is indeed a plural suffix. Semantically, it can be, but is not necessarily, plural. The example in (3) has the primary meaning of a hut for a generic dog. A Lexical phonology based analysis encounters basically the same problem as other lexicalist models. Except for the rather rare *-s* plural, we cannot predict the occurrence of the other plural morphemes since we always have choice of different plural suffixes.

The mixing of phonological and morphosyntactic features in determining plural suffixation is also more or less doomed to be faced with the problem, that we always have a large number of nouns that need to be regarded as exceptions. Consequently, the value of any framework can be measured by the number of exceptions it has to allow.

In the next section, I will illustrate a radically different model, Distributed Morphology, whose main claim is that morphological processes are 'distributed' all over the computational system but do not operate on phonological features. It provides a means to separate morphological from phonological processes, and thus will shed some light as to which morphosyntactic features in fact determine the choice of a particular plural suffix.

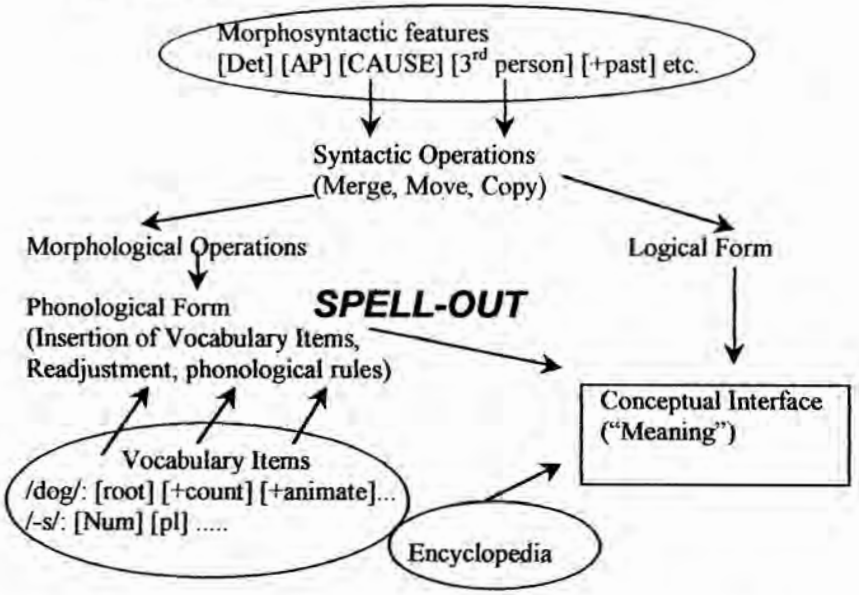
4 An Alternative: Distributed Morphology

The model of Distributed Morphology as proposed by Halle & Marantz (1993) presents as novelty that in contains no lexicon in the traditional sense. Instead, syntactic processes operate purely on morphosyntactic features. Therefore, the insertion of vocabulary items, which are specified for both morphosyntactic and phonological features, occurs after syntactic computation has taken place. Insertion of vocabulary is a mapping of morphemic slots to morphosyntactic features, the latter being discharged at Spell-Out. Note that Spell-Out and therefore Vocabulary insertion is a strictly cyclic process (cf. Noyer 1992, Sauerland 1996). Morphemes are defined as slots with morphosyntactic feature bundles. In subsequent work (Harley 1994, Harley & Ritter 1999, etc.), the feature bundles are shown to be structured in a feature geometry[4]. The main property of this model of grammar is that the computational system, which includes narrow syntax and the morphology component, does not consider phonological features. Therefore,

morphosyntactic features exclusively determine the insertion of vocabulary items.

The operations in the grammar are divided into pre-insertion and post-insertion processes. Pre-insertion operations include *Morphological Merger*, *Fusion*, and *Fission*. They form the morphemic slots, which are specified for morphosyntactic features that are mapped and discharged at insertion of the vocabulary item. After insertion, purely phonological rules apply (cf. Harley & Noyer 1999).

4. Harley & Noyer (1999)
(Slightly modified)



The main claim of Distributed Morphology however poses a considerable obstacle for the analysis of the German plural. As we have seen in section 2, the plural is determined not only by morphosyntactic but also by phonological features. The old question – how does the German speaker know, which plural suffix to attach – can now be asked in a more specific manner: How can we determine the insertion of a particular plural suffix without recourse to phonological features?

4.1 Declension Classes

An answer to the above question might be provided by traditional declension classes. Nouns in German can be categorized according to whether and/or which Genitive singular suffix they take in combination with the classification accord-

ing to gender. If the declension class and the gender feature combined can predict the particular plural suffix, Distributed Morphology can indeed provide the means to solve the problem without recourse to an unsatisfactorily large number of exceptions and half-regular phonological conditions.

5.

Declension class	Genitive singular	Plural
I. Feminine nouns:	∅	-(e)n
		-s
		-e
II. Masculine (weak):	-(e)n	-(e)n
III. Masculine+neuter (strong):	-s	-∅
		-e
		-er
		-s
IV. Masculine (II)+neuter (mixed)	-n	-(e)n

Taking into account declension class, which also includes gender, we capture the following facts. Note that marginal classes will be excluded. Keep also in mind that every noun in German is classified according to one declension class only.

6. ***Insertion of plural suffixes according to declension classes***

n → I/II/IV
er → III
s → I/III (I is marginal) ⇒ s → III
∅ → I/III (I is marginal) ⇒ ∅ → III
e → I/III

According to (6), we can safely predict the occurrence of the suffix –n if we ignore the marginal occurrences of –s and -∅ for class I (see section 6.2). However, class III still has a choice of four plural suffixes. Even if we combine class III and IV as one class, since they take the same genitive, this new class III would still allow a choice of four plural suffixes.

The literature on Distributed Morphology so far has little to say about phonologically empty categories, whether they actually exist in a framework of late insertion or whether they require further specification as phonologically null. However, even if we assume they do not exist, we still have a choice of three plural suffixes for class III.

It has been demonstrated that we can determine the insertion of the suffix *–n* with the help of a feature declension class on the noun. We have independent evidence that a classification according to declension class is valid in German since they also predict the insertion of genitive case markers. However, our analysis has partly failed since one declension class has a choice of at least three

plural suffixes. An analysis within a late insertion model still has to account for the insertion of the correct plural suffix for nouns of class III.

5 Towards an Analysis

Since phonological features cannot be taken into account within a framework of late insertion and declension classes alone cannot determine the insertion of a particular plural suffix, I will assume that nouns of class III in German are classified according to the plural suffix they take.

I propose that nouns of class III in German have to be specified for an additional diacritic class feature that determines which plural suffix they take. This feature is created as a Dissociated Morpheme according to Embick (1998) after computation and after insertion of a noun of declension class III since it does not have any impact on syntactic computation but is essential for the insertion of the correct vocabulary item.

> **"Dissociation:** A morphological signal is *dissociated* when the morphosyntactic position/features it instantiates are not features figuring in the syntactic computation, but are instead added in the morphological component under particular conditions."
>
> Embick 1998:42

I will call the diacritic features A, B, and C respectively and propose the following insertion rules for the plural suffixes in question.

7. ***Insertion Rules***

$$e \rightarrow [A]$$
$$er \rightarrow [B]$$
$$s \rightarrow [C]$$

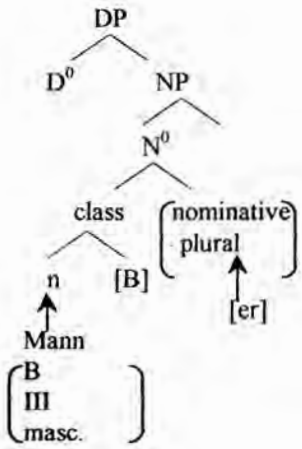
Although the Feature Geometry according to Harley 1994 (and subsequent work) does not give any description as to whether case features are included, I assume that case dominates any other morphosyntactic feature since it is already created in the syntax.

Following Embick & Noyer 1999, I suggest the following insertion process for plural suffixation in German.

Prior to vocabulary insertion, the case and number features have fused since the DP is in a position where nominative case has been assigned in the syntax.

The class feature is added at the same time as the noun is inserted. The noun is inserted and maps its nominal features to the root node **n**. At the same time, a class node is created if the noun is specified for class III that fuses with the case/number node. Cyclic insertion of the noun ensures that the class node is created for which the noun is specified.

8.



5.1 Phonological Adjustment

After vocabulary insertion has taken place, phonological rules adjust the shape of the morphosyntactically conditioned vocabulary items. In case of the plural in German, we have to consider two phonological processes.

5.1.1 Schwa Epenthesis

The insertion of [ə] when the suffix *–n* is selected is phonologically determined. The following phonological readjustment rule applies after the insertion of the plural suffix *-n*.

9. *schwa Insertion*

$$\text{ə} \rightarrow / \text{əC}\_\text{n\#}$$
$$[\text{-liquid}]$$

a.	der Nachbar	die Nachbar-n/*Nachbar-en	the neighbor/neighbors
b.	der Muskel	die Muskel-n/*Muskel-en	the muscle/muscles
c.	das Ohr	die Ohr-en/*Ohr-n	the ear/ears

5.1.2 Umlaut

Previous analyses have claimed that the Umlaut is either part of a separate stem (Wiese 1988) or caused by adding a particular plural suffix to a noun whose stem contains a vowel that can be fronted. I suggest that the Umlaut is a feature at the noun that remains active in a plural environment and is subject to the following readjustment rule after vocabulary Insertion. That would mean that morphosyntactic features are not immediately discharged after insertion of the vocabulary item.

10. *Optional Readjustment Rule after Vocabulary Insertion*
[V, +back] → [-back] / noun
[pl]

However, the occurrence of Umlaut is almost completely unpredictable. Not every stem vowel that can feasibly be fronted is. Alternatively, we could assume that a phonological feature on the noun that indicates that the stem vowel of this noun will be fronted is responsible for Umlaut. However, this issue still awaits a satisfactory analysis, which I will leave to further research.

6 Remaining Issues

6.1 Case

Usually, case is marked on the determiner rather than on the noun. However, masculine/neuter nouns of declension class III can take *-n* as a case marker in the dative plural.

11. a. den Maenn-er-n (m, class III)
the-DAT man-pl-DAT

I suggest that if the noun occurs in a position where it receives dative case, the number and case nodes have not fused prior to Vocabulary Insertion but remain separate in order to insure insertion of a separate case suffix.

6.2 Exceptions

The discussed analysis could not account for the marginal exceptions that occur in class I for the *-s* and the ∅ plural. Previous analyses (cf. Wiese 1988, Clahsen et al. 1992) take the *-s* as the basic variant since it is almost unpredictable, when it occurs. However, taking *-s* as the most basic variant is counterintuitive since it mainly occurs with nouns that are still clearly recognizable of non-German origin, names, short forms, and acronyms. It seems as if it is used for 'unclassifiable' nouns and it can be viewed as the 'elsewhere' variant only for this reason. I would assume that the plural suffix *-n* might rather be the basic variant since it occurs with almost every declension class except for class III.

The null plural suffix is another problem in a framework that does not acknowledge phonologically empty elements. Morphosyntactically, the plural is specified but phonologically it is not realized. Therefore, the insertion of a phonologically null element may be disregarded.

7 Concluding Remarks

The previous analysis suggested a 'reorganization' of nouns in German with regard to the plural suffix they take. Although, the diacritic features are partly based on declension classes and gender, the classification as such cannot escape a certain redundancy. What remains to be done is to find independent evidence that nouns of class III in German can indeed be classified according to their respective plural suffix, an undertaking that would exceed the scope of this paper. What it could demonstrate, however, is that the morphosyntactic feature make-up of nouns in German determines their plural form. The insertion of a plural suffix on the noun is in fact caused by the feature plural on the determiner, the particular plural suffix the noun takes is determined by the noun itself if it belongs to class III. It is clear that the particular phonological make-up of the plural suffix on the noun has no repercussion during syntactic computation. For instance, agreement with adjectival modifiers is determined by the presence or absence of a definite determiner. Therefore, the slot for the plural suffix must be a Dissociated Morpheme as proposed by Embick (1998).

Distributed Morphology provides a model that enables us to abstract from the combination of phonological and morphological features that seem to determine the plural in German but allow only partial generalizations on plural suffixation. The discussion has shown that we can safely predict the plural suffixation for nouns of declension class I, II, and IV. However, purely morphosyntactic features as already known to be present in German are only partly sufficient to determine the plural. Therefore, a split of nouns of declension class III into diacritic 'plural' classes in German was proposed to account for the plural suffixation for those nouns.

The analysis within the framework of Distributed Morphology demonstrates the exact role that morphosyntactic features play in the choice of a particular plural suffix. The above discussion has shown that, although the insertion of plural as such is determined by morphosyntactic environment, the particular shape of the plural suffix is caused by the feature matrix of the vocabulary item to which another vocabulary item is attached. This result is reminiscent of the statement that plural suffixation in German might be a derivational rather than inflectional process. It does not have any impact on syntax, and the above discussion has clearly demonstrated in what way the noun itself is responsible for the particular plural it selects. Although Distributed Morphology denies the relevance of a distinction between derivation and inflection, the discussion has shown, that it cannot escape the distinction completely. the insertion of vocabulary items that have no impact in the syntax and whose morphemic slots are 'dissociated' seem to be derivational rather than inflectional. However, a more detailed discussion of this issue would exceed the scope of this paper.

The stipulation of a feature on the noun, which explains the behavior of the plural for declension classes III nevertheless still requires independent justifica-

tion. We could reduce the problem now to the following question: How can we safely determine the particular plural suffix for nouns of declension class III? Further research on German nominal inflection is still necessary to resolve this part the problem eventually.

Notes

[1] Umlaut and epenthesis of *schwa* will be discussed in section 5.1. The examples show non-derived nouns in nominative case. However, a short discussion of case inflection in the plural will be provided in section 6.1.

[2] Clahsen et al. 1992

[3] Note that the exceptions are only representative examples.

[4] I will largely ignore this issue since it has no further impact on the discussion.

References

Clahsen, Harald, Monika Rothweiler, & Andreas Woest. 1992. "Regular and Irregular Inflection in the Acquisition of German Noun plurals", *Cognition* **45**: 225-255

Duden. *Die Grammatik*. 1973. Mannheim/Wien/Zuerich: Duden Verlag

Embick, David & Rolf Noyer. 1999. "Locality in Post-Syntactic Operations", *MITWPL* **34**: 265-317

Halle, Morris. 1997. "Distributed Morphology. Impoverishment and Fission", *MITWPL* **30**: 425-449

Halle, Morris & Alec Marantz. 1993. "Distributed Morphology and the Pieces of Inflection", Hale, Ken & Samuel Keyser (eds.). *The View from Building 20*. Cambridge: MIT Press: 111-176

Harley, Heidi. 1994. "Hug a Tree: Deriving the Morphosyntactic Feature Hierarchy", *MITWPL* **21**: 289-320

Harley, Heidi & Rolf Noyer. 1999. "State-of-the-Article: Distributed Morphology", *GLOT International* **4.4**: 3-9

Kiparsky, Paul. 1982. "Lexical Morphology and Phonology", Yang, I.-S., (ed.) *Linguistics in the Morning Calm*, Seoul: Hanshing Publishing Co. 3-91.Noyer, Rolf. 1992. *Features, Positions and Affixes in Autonomous Morphological Structure*. MIT: Unpublished dissertation

Phillips, Betty S. & Lowell Bouma. 1980. "The Acquisition of German Plurals in Native Children and Non-Native Adults", *IRAL* **18.1**: 21-29

Sauerland, Uli. 1996. "The Late Insertion of Germanic Inflection", MIT ms.

Wiese, Richard. 1988. *Silbische und Lexikalische Phonologie. Studien zum Chinesischen und Deutschen*. Tübingen: Niemeyer

LF Evidence for PF-islands

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1 Introduction

In this study, we provide an analysis of *Specifier Binding* (e.g. Reinhart 1976, 1983, 1987) and related constructions which makes use of (i) the LF movement operation known as *Quantifier Raising* (QR; e.g. May 1977) and (ii) the classification of islands recently proposed by Merchant (1999). By so doing, we develop a new argument for Merchant's view that there is a class of islands that applies not in the narrow syntax (i.e. derivation from numeration to LF) but in the PF component.

2 QR Analysis of Specifier Binding

It has been standardly assumed in the syntactic literature that in order to establish a bound variable relationship between a quantified NP (QNP) and a pronoun (or, in order for a QNP to *bind* a pronoun), the former must *c-command* the latter.[1] The definition of *c-command* is given in (1):

(1) Node A c(onstituent)-commands node B if neither A nor B dominates the other and the first branching node which dominates A dominates B.
(Reinhart 1976:32)

Thus, while in (2), a bound variable interpretation of the pronoun is possible, such interpretation is not available for (3) due to the absence of the c-command relation between the QNP and the pronoun:

(2) Every girl$_1$ thinks that John likes her$_1$.
(3) *As for every girl$_1$, John likes her$_1$. (May 1977: 146)

However, a systematic exception to the above generalization concerning bound variable anaphora has been observed at least since Reinhart (1976): When a QNP appears in the specifier position of an NP, it is allowed to bind a pronoun

outside the NP even though the specifier does not c-command anything outside its NP under the definition given in (1). This phenomenon of *Specifier Binding* is exemplified in (4):

(4) a. Every boy's$_i$ mother thinks he$_i$ is a genius. (Reinhart 1987: 155)
b. Every senator's$_i$ portrait was on his$_i$ desk. (Hornstein 1995: 108)
c. No one's$_i$ election to the Hall of Fame hinders his$_i$ career. (Hornstein 1995: 108)
d. Someone's$_i$ mother should complain about his$_i$ teacher. (Reinhart 1976: 153)

Some of the previous analyses have tried to account for Specifier Binding by modifying the definition of *bind* so that the QNP in the specifier of NP binds the pronoun outside the NP even in the absence of c-command (e.g. Reinhart 1987, Hornstein 1995).[2] However, such an account does not extend to the following examples discussed in Kayne (1994), where the relevant QNP is not in the specifier but in the complement of an NP:

(5) a. ?The father of every eight-year-old girl$_i$ thinks she$_i$'s a genius.
b. ?The author of no linguistics article$_i$ ever wants it$_i$ to go around. (Kayne 1994: 25)

In order to explain the Specifier Binding examples in (4) and Kayne's examples in (5), we propose the following:

(6) a. In order for a QNP to bind a pronoun, the QNP must c-command the pronoun at the LF representation.
b. In the LF component, Quantifier Raising (QR) adjoins the QNP to the dominating IP (May 1977).

Given (6b), the examples in (4a) and (5a) have the LF representations shown in (7), in which the QNPs successfully c-command the relevant pronouns:

(7) a. [$_{IP}$ [every boy]$_i$ [$_{IP}$ [$_{NP}$ t_i's mother] thinks he$_i$ is a genius.]]
QR … *c-command*

b. [$_{IP}$ [every girl]$_i$ [$_{IP}$ [$_{NP}$ the father of t_i] thinks she$_i$ is a genius.]]
QR … *c-command*

However, this approach raises a number of important questions, only one of which can be adequately addressed in this paper. It is independently argued that QR obeys the locality conditions that constrain overt movements. For example, Bruening (2000) claims that QR is constrained by the Superiority Condition (Chomsky 1973). If this is the case, the following question arises with respect to the derivation of the structures in (7): Why can QR violate the Left Branch Condition (LBC; Ross 1967/1986: 127) in (7a) and the Subject Condition (SC; cf. Chomsky 1973: 249) in (7a, b), even though they constrain overt *wh*-movements in English (as exemplified in (9))? May (1977: 211 fn. 4) answered this question by suggesting that NP is not a bounding node for QR. Instead, we claim, following Merchant (1999), that the LBC and the SC are *PF-islands*; they apply not in the narrow syntax but in the PF component.

3 Sluicing and Islands: Merchant (1999)

Ross (1969) argued that English has the rule of *sluicing* which reduces embedded questions to those that contain only a *wh*-phrase. The relevant examples are given in (8):

(8) a. John bought something, but I don't know what.
b. Someone called, but I can't tell you who.

Interestingly, as Ross (1969: 276-7) originally observed, the violation of island constraints on movement is ameliorated under sluicing. Thus, island violations exemplified in (9) and (10) are repaired in the examples with sluicing given in (11) and (12):

(9) a. *Left Branch Condition*:
*How detailed$_1$ does he want [a t_1 list]? (Merchant 1999: 193)
b. *Subject Condition*:
*Which Marx brother$_1$ did she say that [a biographer of t_1] {interviewed her / worked for her}? (Merchant 1999: 220)
c. *First Part of the C(oordinate) S(tructure) C(onstraint) (Conjunct Condition)*[3]:
*Which senator$_1$ did they persuade Kennedy and t_1 to jointly sponsor the legislation? (Merchant 1999: 230)

(10) a. *Complex NP Constraint (CNPC)*:
*Guess which$_1$ (Balkan language) they hired someone who speaks t_1 !
(Merchant 1999: 249)
b. *Second Part of the CSC*:
*How many movies$_1$ did Bob eat dinner and see t_1 that night?
(Merchant 1999: 265)

(11) a. *Left Branch Condition*:
He wants a detailed list, but I don't know how detailed.
(Merchant 1999: 197)

b. *Subject Condition*:
A biographer of one of the Marx brothers {interviewed her / worked for her}, but I don't remember which. (Merchant 1999: 220)

c. *Conjunct Condition*:
?They persuaded Kennedy and some other senator to jointly sponsor the legislation, but I can't remember which one.
(Chung et al. 1995: 273)

(12) a. *Complex NP Constraint*:
They hired someone who speaks a Balkan language – guess which!
(Merchant 1999: 249)

b. *Second Part of the CSC (Extraction out of a Conjunct)*:
Bob ate dinner and saw a couple of movies that night, but he didn't say how many. (Merchant 1999: 265)

Chung et al. (1995) have argued that this island violation repair by sluicing is accounted for by assuming that examples with sluicing are generated not with movement or deletion but with a type of LF copying, as illustrated in (13):

(13) a. At Spell-Out:
Someone called, but I don't know [$_{CP}$ who [$_{IP}$ φ]].

b. At LF:
Someone called, but I don't know [$_{CP}$ who [$_{IP}$ **someone called**]].

However, there are at least three pieces of evidence which indicate that sluicing constructions involve *wh*-movement (and deletion). First, Ross (1969: 253-4) and Merchant (1999: 109) observe that the sluiced *wh*-phrase must bear the case that it would have in the non-elliptical form. The German example in (14) illustrates this point:

(14) German (Merchant 1999: 107):
Er will jemandem schmeicheln, aber sie wissen nicht,
he wants someone.DAT flatter but they know not
{ *wer / *wen / wem }.
who.NOM who.ACC who.DAT
'He wants to flatter someone, but they don't know who.'

Second, according to Merchant (1999: 110), it holds cross-linguistically that a language L allows preposition stranding under sluicing if and only if L allows preposition stranding under *wh*-movement. The following contrast between English and German exemplifies this observation:

(15) English (Merchant 1999: 111):
  a. Peter was talking with someone, but I don't know (with) who.
  b. Who was he talking with?

(16) German (Merchant 1999: 113):
  a. Anna hat mit jemandem gesprochen, aber ich weiß nicht, *(mit) wem.
     Anna has with someone spoken, but I know not with who
  b. *Wem hat sie mit gesprochen?

Third, in Serbo-Croatian, which is a multiple *wh*-fronting language, sluicing obeys the Superiority Condition (Stjepanovic 1999):

(17) Serbo-Croatian (Stjepanovic 1999: 145):
  a. A: Neko je udario nekog.
     Somebody is hit someone 'Somebody hit someone.'
  b. B: Ko koga?
     who whom 'Who hit whom?'
  c. B: ?*Koga ko?
     whom who

These three observations concerning sluicing succinctly show that the usual mechanisms that regulate *wh*-movement in non-elliptical questions also operate in identical ways under sluicing, which supports the view that sluicing involves *wh*-movement followed by PF deletion.

If sluicing constructions are in fact generated through *wh*-movement and PF deletion, why are island violations ameliorated under sluicing? In answering this question, Chomsky (1972) claimed that # is assigned to an island when it is crossed by a movement operation, and that the derivation is salvaged only when a category containing a #-marked item undergoes deletion.[4] Much more recently, Merchant (1999) proposes that the LBC, the Subject Condition, and the Conjunct Condition are *PF-islands*: These constraints apply not in the narrow syntax but in the PF component, and this is why PF deletion of these islands has an amelioration effect for their violations. As an argument for the claim that the LBC is a PF-island, Merchant shows that not only sluicing but also VP ellipsis inside *than*-clause also repairs a violation of that constraint. Thus, while the non-elliptical form of *than*-clause in (18b) is ungrammatical due to the LBC violation induced by the null operator movement, the one with VP ellipsis in (18a) is well-formed (Merchant 1999: 198):

(18) a. Abby wrote a more interesting novel than Ben did.
  b. *Abby wrote a more interesting novel than Ben wrote [a ___ novel].
  c. … than [$_{DegP}$ *Op*]$_2$ Ben did ~~[write [*t'*$_2$ [a *t*$_2$ novel]]]~~

The argument that Merchant provides for the PF status of the Conjunct Condition is the fact that null subjects cannot be coordinated with non-null NPs, as shown in (19):

(19) Greek:
{ Aftos / *pro } kai o Pavlos ine adherfia.
he pro and the Paul are siblings. (Merchant 1999: 234)

This example and the example in (9c) jointly indicate that a conjunct may not be phonetically null irrespective of whether it is a trace or a pronoun (cf. Grosu 1981). Given that the relevant constraint crucially refers to the phonetic content of an element (and not to the syntactic structure), it should be located in the PF component.

As for the PF status of the Subject Condition, Merchant (1999) provides the following explanation:

(20) a. An extraction from a moved position is impossible; an extraction from a base position is possible (e.g. Takahashi 1994).
b. I^0 has a 'strong' EPP feature, where 'strong' means that the feature is uninterpretable at the PF-interface.
c. If a 'strong' feature does not reach the PF interface as a result of deletion, then the absence of the associated checking movement should not matter (Lasnik 1999).
d. Thus, in the case of sluicing, *wh*-phrase is extracted from the VP-internal subject position as shown in (21), and hence the relevant movement is well-formed.

(21) A biographer of one of the Marx brothers interviewed her, but I don't remember which$_3$ [$_{IP}$ ~~____ [$_{VP}$ a biographer of t_3 interviewed her]]~~.

However, Lasnik (to appear) provides a strong argument that EPP (of I^0) cannot be a matter of feature-checking. Given Lasnik's argument, in this study we depart from Merchant (1999) and stipulate that the ban on extraction from [Spec, IP] itself is a PF-island, leaving its exact nature for future research.

We have seen above that under Merchant's (1999) analysis, the violations of the LBC, the SC, and the Conjunct Condition are repaired by sluicing because these constraints are PF-islands. Then, how about the CNPC and the second part of the CSC? According to Merchant, these islands actually constrain *wh*-movement in sluicing contexts, and the apparent amelioration effect is only illusory. He suggests that in (12a) (repeated here as (22)), the sluice in fact does not contain an island (a complex NP in this case) as shown in (23a), where *he$_4$* is an E-type pronoun licensed by the trace t_4:

(22) They hired someone who speaks a lot of languages – guess how many!

(23) They hired someone [who$_4$ t_4 speaks a lot of languages].
– guess how many$_1$ ~~[he$_4$ speaks t_1]~~!

As a piece of evidence for this analysis, Merchant shows that when we use an NP that does not license E-type anaphora (e.g. an NP headed by *no* or *few*), the relevant example becomes degraded:

(24) They hired {*no / ??few} people who spoke a lot of languages – guess how many!

The degraded status of (24) indicates that not only (25a) but also (25b) are ill-formed derivations for (24), which in turn shows that the CNPC is not a PF-island but a condition that applies in the narrow syntax[5]:

(25) a. *Guess how many ~~they spoke t~~ !
b. *Guess how many ~~[they hired no / few people who spoke t languages]~~.

The same analysis holds for the second part of the CSC. Merchant argues that (12b) (repeated here as (26)) is derived from (27), where *he$_1$* is an E-type pronoun licensed by the trace t_1[6]:

(26) Bob$_1$ [t_1 ate dinner] and [t_1 saw a movie] that night, but he didn't say which.
(27) … he didn't say which ~~[he$_1$ saw t that night]~~.

If an NP that does not in general license an E-type pronoun is used, the relevant example becomes degraded:

(28) *No farmer sold his farm and moved to a certain town – I don't remember which.

The ungrammaticality of (28) indicates that not only (29a) but also (29b) are ill-formed derivations for (28), which in turn shows that the second part of the CSC is not a PF-island but a constraint in the narrow syntax

(29) a. * … which ~~he moved to t~~.
b. * … which ~~[no farmer sold his farm and moved to t]~~.

To sum up so far: There are several pieces of evidence which suggest that sluicing is best viewed as *wh*-movement followed by PF deletion. The amelioration of island effects with sluicing, according to Merchant (1999), has two sources. As for the LBC, the SC, and the Conjunct Condition, the violation repair is due to the fact that these islands are located in the PF component. As

for the CNPC and the second part of the CSC, the availability of the E-type pronoun in the sluice masks the effects of these islands under sluicing, even though they actually constrain *wh*-movements even under sluicing contexts (but see note 5).

4 PF-islands and Quantifier Raising

4.1 QR analysis of Specifier Binding and related constructions

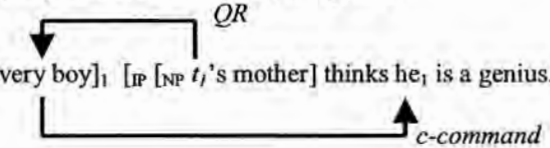
In the previous section, we have seen that under Merchant's (1999) analysis (with our modification), the LBC, the SC, and the Conjunct Condition are PF-islands and thus apply not in the narrow syntax but in the PF component. This analysis predicts that even though these islands constrain overt movements that are involved in the input to the PF component, they will not apply to movements in the LF component, given that these movements occur after the split to the PF component. In other words, Merchant's classification of islands predicts (30):

(30) Prediction: LF movements may violate PF-islands.

This prediction is borne out with respect to the LBC and the SC by the examples that we have seen, namely by those in (7), which are repeated here as (31) and (32). In (31), the LF movement of QR apparently violates both the LBC and the SC, and in (32), it violates the SC, but the examples are well-formed with the bound variable interpretation. And the example in (33) from Higginbotham (1980: 691) shows the same point with respect to the LBC:

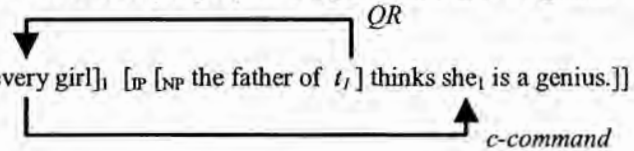
(31) The LBC and the SC:

a. Every boy$_1$'s mother thinks he$_1$ is a genius.



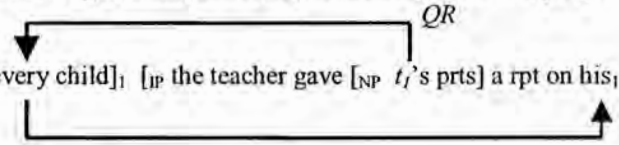
(32) The SC:

a. ?The father of every eight-year-old girl$_1$ thinks she$_1$'s a genius.



(33) The LBC:

a. The teacher gave every child$_1$'s parents a report on his$_1$ progress.



The prediction in (30) is also borne out with respect to the Conjunct Condition. In the examples in (34) and (35), bound variable interpretation is possible, which under the present analysis indicates that QR may violate the Conjunct Condition[7,8]:

(34) Conjunct Condition:
?Diane told the other faculty members and every applicant$_1$ that he$_1$ was accepted.

(35) Conjunct Condition and the SC:
?The faculty members and every applicant$_1$ knew that he$_1$ was accepted.

Thus, the prediction in (30) from Merchant (1999) concerning LF movement is borne out to a substantial extent by the examples with QNPs and bound pronouns, which in turn provides further support for the existence of PF-islands.

4.2 Testing a further prediction

Under Merchant's (1999) classification, while the LBC, the SC, and the Conjunct Condition are PF-islands, constraints like the CNPC and the second part of the CSC are not PF-islands and are located in the narrow syntax. This predicts (36):

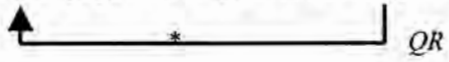
(36) LF movements may not violate the islands in the narrow syntax.

The fact that the example in (37) is ungrammatical with the bound variable interpretation apparently bears out the prediction in (36) with respect to the CNPC:

(37) Complex NP Constraint:

a. *The man [who disliked every boy$_1$] hit him$_1$. (Hornstein 1995: 23)

b. [IP every boy$_1$ [IP the man [who disliked t_1]] hit him$_1$



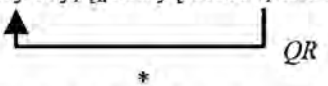
However, it is often argued that QR obeys an independent locality condition of clause-boundedness (cf. May 1977). If so, the ungrammaticality of (37) may stem from the fact that QR is clause-bound and not from the violation of the CNPC. Then, the example in (37) is not sufficient to determine whether the prediction in (36) is the correct one.

On the other hand, the example in (38) succinctly shows that the prediction in (36) is borne out with respect to the second part of the CSC. In this example, bound variable interpretation is unavailable, which means that the movement of the QNP is constrained by the second part of the CSC and thus it cannot move to the position from which it c-commands the pronoun at LF:

(38) Second part of the CSC:

a. *Mary kissed every boy$_i$ yesterday and hugged his$_i$ mother today.

b. [$_{IP}$ every boy$_i$ [$_{IP}$ Mary [kissed t_i and hugged his$_i$ mother today]]



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Thus, to the extent that we can test, the prediction in (36) seems to be a valid one, as well as the one in (30).[9]

4.3 Summary

In this section, we have argued that Specifier Binding and related constructions indicate that QR may violate the LBC, the Subject Condition, and the Conjunct Condition, and suggested that this follows from Merhchant's (1999) proposal that these constraints are PF-islands. In addition, we have shown that the second part of the CSC constrains QR, which indicates that this condition is located in the narrow syntax as Merchant envisions.

5 A Note on Weak Crossover

Under the present analysis, bound variable interpretation is possible in (39a) because QR moves the QNP to a position from which it c-commands the pronoun at LF, as shown in (39b):

(39) a. Every boy$_i$'s mother thinks he$_i$ is a genius.

b. LF: [$_{IP}$ [every boy]$_i$ [$_{IP}$ [$_{NP}$ t_i's mother] thinks he$_i$ is a genius.]]

However, the LF representation in (39b) violates constraints like the Bijection Principle (Koopman and Sportiche 1982) or the Parallelism Constraint on Operator Binding (Safir 1984), which are postulated to exclude weak crossover examples as in (42):

(40) *The Bijection Principle* (Koopman and Sportiche 1982: 146):
Every variable is locally bound by one and only one A'-position and every A'-position locally binds one and only one variable.

(41) *The Parallelism Constraint on Operator Binding* (Safir 1984: 607):
If O is an operator and x is a variable bound by O, then for any y, y a variable bound by O, x and y are [α pronominal].
([+ pronominal]: pronominal variable,
[- pronominal]: empty category variable)

(42) a. ?*His$_i$ mother loves everyone$_i$.
b. LF: [$_{IP}$ everyone$_i$ [$_{IP}$ his$_i$ mother loves t_i]].

In order to distinguish the grammatical example as in (39) and the ungrammatical one as in (42), we assume that the constraint relevant to the weak crossover effect is the Leftness Condition given in (43):

(43) *Leftness Condition* (cf. Chomsky 1976):
A variable cannot be coindexed with a pronoun to its left.

This constraint entails that linear order exists in the narrow syntax, contrary to the assumption adopted in Chomsky (1995: Ch. 4). We follow Fukui (1993) and Saito and Fukui (1998) in assuming that the structures in the narrow syntax have linear order.

6 Conclusion

In the generative framework, the language faculty is assumed to be embedded in performance systems of two general types: articulatory-perceptual and conceptual-intentional. If so, we may expect that there are locality constraints with different sources: ones required from the PF-side, and ones required from the LF-side. In our interpretation, the classification of islands by Merchant (1999) is a concrete instantiation of this possibility. Based on a detailed analysis of sluicing constructions, he has proposed that islands should be classified into those that apply in the PF component and those that apply in the narrow syntax. This theory makes the prediction that LF movements may violate PF-islands, while they must obey non-PF-islands. In this study, we have shown that to the extent that QR can be regarded as an LF movement, this prediction seems to be borne out to a substantial extent. Thus, the facts concerning QR provide further support for the pluralistic view of islandhood where various parts of the grammar interact to constrain extractions.[10]

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We would like to thank Cedric Boeckx and Howard Lasnik for their very detailed comments on the present study. We are also grateful to Adolfo Ausin, Sigrid Beck, Željko Bošković, Nobuhiro Miyoshi, Norvin Richards, William Snyder, and the participants of the WECOL 2000 for valuable comments and suggestions. The usual disclaimers apply.

Notes

1. See Ueyama (1998) for other possible ways to establish bound variable anaphora.
2. See e.g. Kayne (1994) and Büring (2000) for other possible analyses of the Specifier Binding phenomenon. Unfortunately, we cannot evaluate these alternatives in this paper.
3. *The Coordinate Structure Constraint* (CSC, Ross 1967/1986: 98):
   In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.
4. See Lasnik (2000) and Lasnik (2001) for more detailed discussion.
5. However, Lasnik (2001) provides a strong argument that sluicing does repair violations of the CNPC, contrary to Mechant's claim. According to Lasnik, the example in (i), which contains a pronoun bound by the quantifier outside the relative clause, is reasonably acceptable:
   (i) Every linguist$_i$ met a philosopher who criticized some of his$_i$ work.
   Tell me how much of his$_i$ work ~~[every linguist$_i$ met a philosopher who criticized t_i]~~.
   Then, the CNPC should also be classified as PF-islands. Our analysis is compatible with this conclusion, as will become evident below.
6. As Lasnik (personal communication) correctly points out, it is not clear why it is the trace t_i and not the NP *Bob* that licenses the pronoun in (27).
7. We have to admit that it is not the case that all of our informants accepted the examples in (34) and (35): Some of them rejected these examples as ungrammatical or quite marginal.
8. Some of our informants reported to us that the wide scope interpretation of the universal quantifier is available in (i). The availability of this interpretation also supports the idea that Conjunct Condition is a PF-island:
   (i) Some traveler visited every Italian city and Paris. $\exists > \forall$, $\forall > \exists$
9. The fact that the wide scope interpretation of the universal quantifier is not available in (ii) also supports the idea that the second part of the CSC applies in the narrow syntax:
   (i) A (different) student likes every professor. $\exists > \forall$, $\forall > \exists$
   (ii) A (#different) student likes every professor and hates the dean. $\exists > \forall$, $*\forall > \exists$
   (cf. May 1985)
10. There are several problems that remain to be addressed. First, Hornstein (1995: 107) reports examples in which variable binding is impossible even though the QNP takes scope over the entire clause. The relevant examples are (i) – (iii):
   (i) *[$_{DP}$ At least one [$_{NP}$ picture of every senator$_i$]] graced / adorned his$_i$ desk.
   (cf. At least one picture of every senator was on the desk.)
   (ii) *The AG's investigation of every senator$_i$ threatened his$_i$ career.
   (cf. The investigation of every senator lasted on average a week.)
   (iii) *The election of no one$_i$ to the Hall of Fame hindered his$_i$ career.
   (cf. The election of no one to the Hall of Fame was recorded.)
   Second, even though left branch subextractions are impossible under sluicing (Merchant 1999: 213), this seems to be possible in the case of QR, as the contrast between (iv) and (v) shows:

(iv) *He takes (easily) obtainable drugs, but I don't know how easily.
(cf. *How easily did he take [___ obtainable drugs]?)
(v) [[[[Some boy$_i$'s] father's] best friend's] daughter] wants him$_i$ to marry her.
(Higginbotham 1980: 691)

At this point we do not have good solutions to these problems.

References

Bruening, Benjamin. 2000. "QR obeys Superiority: Frozen scope and ACD", ms., MIT.

Büring, Daniel. 2000. "Variable binding out of DP revisited", paper presented at the USC Linguistics Colloquium.

Chomsky, Noam. 1972. "Some empirical issues in the theory of transformational grammar", in *Goals of Linguistic Theory*, ed. Paul Stanley Peters. Englewood Cliffs: Prentice-Hall Inc.

Chomsky, Noam. 1973. "Conditions on transformations", in *A Festschrift for Morris Hale*, eds. Stephen R. Anderson and Paul Kiparsky, 232-286. New York: Holt, Rinehart, and Winston.

Chomsky, Noam. 1976. "Conditions on rules of grammar", in Chomsky 1977, *Essays on Form and Interpretation*. NY: North-Holland.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.

Chung, Sandra, William Ladusaw, and James McCloskey. 1995. "Sluicing and Logical Form", *Natural Language Semantics* **3**:239-282.

Diesing, Molly. 1992. *Indefinites*. Cambridge, Mass.: MIT Press.

Fukui, Naoki. 1993. "Parameters and optionality", *Linguistic Inquiry* **24**:399-420.

Grosu, Alexander. 1981. *Approaches to Island Phenomena*. Amsterdam: North-Holland.

Higginbotham, James. 1980. "Pronouns and bound variables", *Linguistic Inquiry* **11**:679-708.

Hornstein, Norbert. 1995. *Logical Form: From GB to Minimalism*. Oxford: Blackwell.

Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, Mass.: MIT Press.

Koopman, Hilda, and Dominique Sportiche. 1982. "Variables and the bijection principle", *The Linguistic Review* **2**:139-160.

Lasnik, Howard. 1999. "On feature strength: Three minimalist approaches to overt movement", *Linguistic Inquiry* **30**:197-217.

Lasnik, Howard. 2000. "Salvation by deletion", Handout of the talk presented at MIT.

Lasnik, Howard.2001. "When can you save a structure by destroying it?", in *Proceedings of NELS 31*.

Lasnik, Howard. To appear. "A note on the EPP", *Linguistic Inquiry* **32**.

May, Robert. 1977. *The Grammar of Quantification*. Doctoral dissertation, MIT.

May, Robert. 1985. *Logical Form*. Cambridge, Mass.: MIT Press.

Merchant, Jason. 1999. *The Syntax of Silence: Sluicing, Islands, and Identity in Ellipsis*. Doctoral dissertation, UC Santa Cruz.

Reinhart, Tanya. 1976. *The Syntactic Domain of Anaphora*. Doctoral dissertation, MIT.

Reinhart, Tanya. 1983. *Anaphora and Semantic Interpretation*. London: Croom Helm.

Reinhart, Tanya. 1987. "Specifiers and operator binding", in *The Representation of (In)definiteness*, eds. Eric J. Reuland and Alice G. B. ter Meulen. Cambridge, Mass.: MIT Press.

Ross, John R. 1967. *Constraints on Variables in Syntax*. Doctoral dissertation, MIT. [Published as *Infinite Syntax* (1986). NJ: Ablex Publishing Corporation.]

Ross, John R. 1969. "Guess who?", in *Proceedings of CLS* **5**:252-286.

Safir, Ken. 1984. "Multiple variable binding", *Linguistic Inquiry* **15**:603-638.
Saito, Mamoru, and Naoki Fukui. 1998. "Order in phrase structure and movement", *Linguistic Inquiry* **29**:439-474.
Stjepanovic, Sandra. 1999. "Multiple sluicing and Superiority in Serbo-Croatian", in *Proceedings of NELS 29*, 145-159.
Takahashi, Daiko. 1994. *Minimality of Movement*. Doctoral dissertation, University of Connecticut.
Ueyama, Ayumi. 1998. *Two Types of Dependency*. Doctoral dissertation, University of Southern California.

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The Right-Node-Raising Construction: A Derivational Approach Interfacing Syntax and Prosody

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1. Introduction

The objective of this paper is to outline an interface of syntax and prosody needed to account for the Right-Node-Raising (RNR) construction. Why is an interface needed? RNR appears to be a prosodic phenomenon; it can violate about every syntactic constraint that would normally apply to structures of this sort. Nevertheless, RNR must be couched in a theory of syntax for computational purposes. Furthermore, there is evidence that RNR, despite its highly prosodic nature, is not entirely free of syntactic constraints.

2. Properties of RNR: Evidence against syntactic constraints

RNR is the most common form of right-edge deletion in coordinate structures in which the elements necessary for recovery are farther to the right, usually in another clause and therefore in a position hierarchically inferior to the gap, as shown in (1). This is the first reason a syntactic account seems unlikely: no c-command relation is possible between the "shared elements" and the gap, if we assume Kayne (1994) which prohibits a rightward raising operation.

(1) $[_{C1} \ldots XP\ [e_i]\ \&\ [_{C2} \ldots ZP\ [\alpha_i]\ ]]$
where C = conjunct, and [α] is a prosodic constituent, cf. (17)
e.g.: Sue writes e_i and Kim reads [long family letters]$_i$

Hartmann (1998) provides a number of good arguments for rejecting a syntactic approach to RNR. Although I agree with Hartmann that prosody is central, I will argue here that the Minimalist Program (Chomsky 1995, 1998) provides a suitable framework for unifying the prosody with the syntax of RNR.

2.1. The problem and my proposal

The problem and my proposal for solving it can be summarized this way: If we adopt an asymmetric phrase structure with leftward movement only, we must assume that the RNR gap is licensed by some element(s) other than the element(s) which recover the gap, if we assume that c-command is necessary for licensing. In §3 I will propose that a prosodic feature plays a role in the licensing of the gap. This feature is realized in PF in the form of an intonation break. The licensing that I will propose is not syntactic, as Hartmann also claims, and therefore it does not require a specifier-head relation, and it is independent of the shared elements which are required only for the recovery of deletion which, as I will propose in §4.2, follows a principle called "Coordinate Feature Matching." Coordinate feature matching, I will claim, occurs in all forms of ellipsis in coordinate structures.[1]

2.2. RNR is not sensitive to the CP node

Ellipsis in RNR is somewhat different than other forms of ellipsis in coordination. In contrast to Gapping, for instance, RNR is not sensitive to the CP node as a syntactic position, as seen in (2):[2]

(2) a. Sue read e_i and/[$_{CP}$?while Bill wrote [long letters to family members]$_i$] (RNR)
   a' Sue read$_i$ long letters and/[$_{CP}$*while Bill e_i long novels] (Gapping)
   b. Sue wrote that Jill gave Bill e_i and [$_{CP}$ that Mary gave Harry e_i [a copy of her novel]$_i$] (RNR ok with CP node)
   b' Sue wrote that Jill gave$_i$ Bill and [$_{CP}$ that Mary *e_i/gave Harry a copy of her novel] (Gapping out with CP node).

On the other hand, when the C position is occupied by a complementizer that clearly heads a subordinate clause and establishes a semantic relation of subordination, then RNR is out, as is Gapping:

(3) a. *Sue mailed e_i, because Sally had addressed [the long letter to the family]$_i$ (RNR out)
   b. *Sue mailed$_i$ the letter because Sally e_i the accompanying gift (Gapping out)

RNR, like Gapping, is also out when the relation between two clauses, even without a complementizer, is not a coordinate relation:

(4) a. *Sue mailed e_i, assuming that Sally had addressed [her long letter to the family]$_i$ (RNR out when symmetry is lacking)
b. *Sue dictated$_i$ the letters, assuming that her father *e_i his response to them (Gapping out when symmetry is lacking)

I think it is clear from (2) - (4) that RNR is not syntactically constrained, but it is sensitive to semantics, in particular to whether the gap is in a semantically symmetric context.[3] This aspect of the semantics of RNR will be taken up again in §4. In the next section we look at the prosody of RNR constructions. We will discover that the prosodic features of RNR play a significant role.

2.3. RNR requires phonological identity

In contrast to Gapping (5a) and Verb Phrase Ellipsis (5b), RNR (6) requires phonological identity:

(5) a. Peter [has often visited]$_i$ his relatives, and his sisters [e_i](=have often visited) their relatives
b. Peter [has often visited his relatives]$_i$ but not his sisters [e_i](=have often visited their relatives)
(6) a. Peter entertains [e_i] and his brother interrogates [his relatives]$_i$
b. *Peter entertains [e_i] and his sister interrogates [her relatives]$_i$
c. *Have you heard that Peter [e_i] but not his parents [are coming to visit]$_i$

So while RNR may violate a number of typical syntactic constraints, it does not allow non-phonetic identity. This points in my view to the fact that RNR is a highly phonetic phenomenon.

In the next section we turn to the prosody of RNR. We will see that RNR is also very sensitive to prosodic features; this fact provides further evidence, as has been claimed in several studies, that RNR is indeed a phonologically constrainted construction (see Booij 1985, Hartmann 1998, Swingle 1993).

3. The prosody of RNR

For simplicity's sake, we will consider only RNR constructions that have just two conjuncts (with one gap); obviously an infinite number of conjuncts and gaps are possible.

The RNR construction can be found in a wide variety of languages, a fact that suggests that the principles on which it is based are universal.[4] A universally-present prosodic feature is the intonation break which I will claim is instrumental in licensing the gap.

3.1. What is required and not required

In RNR constructions an intonation break is required before the gap, realized as a pause. The intonation break must be such that it is clear that the statement is not complete. In other words, it must be clear that more is to come. It cannot be confused with the intonation that accompanies the completion of a statement, which is typically a falling intonation. In order to prevent this confusion, a slightly rising intonation is often used before the gap. A falling intonation characteristic of the end of a statement sometimes begins on the last word before the elements shared by the two conjuncts. Often the word immediately preceding the shared elements stands in contrast to the word immediately preceding the first gap:[5]

(8) Louise is writing a long↗ e_i and Lois a short↘ letter$_i$

3.2. Prosody and syntax

Cheng & Rooryck 2000 propose that a prosodic feature of *wh*-in situ constructions plays a central role in the licensing of *wh*-in-situ in French. In their theory licensing occurs by way of a specifier-head relation: a Q-morpheme in C licenses a gap in its specifier position. In RNR constructions, there is no such relation between the RNR gap and a head. Nevertheless, I will propose that intonation plays a role in the licensing of the RNR gap, and that in both the prosody interfaces with the syntax.

3.2.1. Licensing of the RNR gap

In RNR constructions the gap appears to be able to occur in any position. A look at the RNR constructions given so far appears to suggest that the licensing of an RNR gap is a form of government; structurally it looks the same as the relation between a verb and its complement, or a preposition and its object. However, there are significant differences which rule out this possibility. Note first of all that the direction of the relation in RNR is the same, regardless of what language RNR occurs in. Even Japanese, a paradigmatic head-final language, has an RNR gap in the same position as English (see note 4), even though Japanese is an OV language. Since we are working with a feature of prosody for licensing in RNR, it is not surprising that syntactic parameters like head-final and head-initial are not respected.

What I will propose, therefore, is that prosody respects this universal parameter: all languages are linear, and whenever they are left-to-right linear, we will find RNR in them.[6] So RNR appears to conform to the notion of asymmetry in Kayne (1994), but Spec-head feature checking plays no role.

That much is relatively obvious. The exact mechanism of licensing in RNR is more subtle. In (9) is a closer analysis of some typical RNR constructions:

(9) a. [$_{TP}$ Louise is writing ¤ [$_{DP}$ e_i and [$_{TP}$ Lois is reading ¤ [$_{DP}$ a long family letter]$_i$]]] (¤ = intonation break)
b. [$_{TP}$ Peter is writing a long ¤ [$_{NP}$ e]$_i$ and [$_{TP}$ Curt a short ¤ [$_{NP}$ letter]$_i$]]

In (9a,b) we have constructions with a DP and NP gap, respectively. The standard syntactic proposals for the licensing of DPs and NPs are not sufficient, however, as the data in (10) make clear (PC = prosodic constituent):

(10) a. [$_{TP}$ Paul gave ¤ [e]$_i$ and [$_{TP}$ Fred loaned ¤ [$_{PC}$ his best friend a T-shirt]$_i$]]
b. *Joe has and Jim has loaned his best friend a book on physics[7]
c. *Sue bought and Sally rented it
d. ?Sue bought and Sally rented it from a friend
e. Jim ran e_i and Joe swam [very rapidly]$_i$

In (10a,b) we see that a non-syntactic constituent can be deleted. This means 1) that government or Spec-head feature checking as a mechanism for licensing will not work for RNR, and 2) that there are prosodic constituents which must be distinguished from syntactic constituents and which are not subject to syntactic constraints. Prosodic constituents I will assume are determined in prosodic structure (p-structure), as defined in Inkelas & Zec (1995). (10b) indicates that there are apparently syntactic limits on what constitutes an acceptable remnant of RNR deletion; evidently the remnant must meet some kind of minimality requirements which require an interface with the syntax. (10c) appears to indicate that there are prosodic limits on what can constitute a shared element: shared elements must be able to bear some degree of stress. We note in (10d) that if the weak pronoun *it* is joined with other lexical items, then they together can be shared elements. In (10e) we note that an adverbial can also be elided by RNR as well as nominals.

What conclusion can we come to about licensing in RNR? Clearly this licensing does not require Spec-head feature checking or government, nor does it require any movement. In short, it does not in any way conform to the syntactic requirements on licensing. For this reason we must look to the prosody of RNR, as have Hartmann (1998), de Booij (1985), Swingle (1993), and more.

Given that the prosody of RNR is the most consistent feature of the construction, we are led to conclude that the intonation break before the gap somehow plays a role, as I suggested at the outset. It is important to note about intonation that, as a feature of prosody, it is subject only to the principles of prosody and not to the syntax. It is, nevertheless, interaced with the syntax, as indicated in (11) where the syntax of *compose*, whether transitive or not, depends on the prosody of RNR:

(11) Joe composed and Jim sang his girl friend a love song

If RNR, as a prosodically constrained ellipsis, results from the lack of PF realization, then the syntax interface in RNR must be prior to PF. If the prosody of RNR were only interfaced with the Logical Form of a sentence, then the kind of ambiguity we see in (10b) would not be prevented, as it is a syntactic ambiguity and not a logical or semantic ambiguity. We will see in §4.4 that derivation by phase provides the necessary interface of the syntax and prosody.

3.2.2. Intonation as a signal for the nullification of phonological features

Keeping the data we have just seen in mind, in particular the fact illustrated with (5) and (6) that RNR is phonologically sensitive, we can now consider my proposal for prosodic licensing in RNR. My proposal is that an intonation feature is generated where the intonation break occurs, the point where a comma is written. This intonation feature, realized as a slight pause or break, and sometimes preceded by a slightly rising intonation, marks a point in the first conjunct where the nullification of phonological features begins. A second intonation feature is generated right before the shared elements, and it occurs also as a slight pause, followed by a falling intonation accompanying the shared elements, signaling the conclusion of the second conjunct.

A significant difference in the syntax is signaled by the two types of intonation patterns. The first one indicates a gap, while the second one indicates the point where the recovery of the gap begins. The two intonation breaks are therefore closely related to each other and must work in conjuntion with each other – one reason the RNR construction can occur only in symmetric coordinate constructions – but they have complementary functions: one signaling a gap, the other lexical items for the recovery of the gap. What occurs in RNR is a SYMMETRIC RELATION creating an ellipsis by means of a derivational process. The benefit of this derivational process is what we witness whenever an RNR construction is generated: a lexical item or set of lexical items only needs to be phonologically realized once. This kind of derivation is more economical because avoiding the phonological component in a derivation is always more economical, as discussed in Chomsky and Lasnik (1993).

I will call the intonation break that signals the beginning of the nullified phonological features the NON-FINAL INTONATION (NFI) and the feature itself the NFI-feature; the feature which signals the onset of the recovery is then logically the FINAL INTONATION FEATURE, or FI-feature. Rather than check a feature in a Spec position or govern an empty category, the NFI-feature simply signals that phonological realization is being momentarily interrupted and that a gap is occurring which must be recovered later. For this to work, all that we must assume is that intonation is capable of signaling the onset, middle and end of a construction, and in so doing marks a point where the phonological realization of lexical items is lacking. We note that the other features, the syntactic and semantic features, remain intact. The gap created must nevetheless be licensed. We will get to this licensing in §4.[8]

An interesting fact about RNR is that it respects principles of morphology. This can be seen in (12):

(12) a. Bill will write the pre- and Joe the post-game story
b. *Bill will write descriptive- and Joe colorfully

All that is needed for (12) to derive is the kind of prosody that I described earlier; no focus accent is needed. For this reason, the prosodically-driven ellipsis rule that I am proposing must be interfaced with the morphology as well as the syntax. The exact nature of this interface will be left to further research; I mention this fact here to emphasize that prosody is powerful, and that it must be interfaced with the rest of the grammar.

In the next section we look at some of the rudimentary steps in the derivation of an RNR construction, focussing on how the prosody interfaces with the syntax. We begin with a brief look at derivational phases in RNR.

4. Steps in the derivation of an RNR construction

First of all we note an interesting fact about the derivation of an RNR construction, discussed also in Toman (1984/85): It is clear from the German dative Case morphology of *roten* and *blauen* in (13) that the ellipsis cannot be derived in the "base," i.e. at lexical insertion (adapted from Toman 1984/85: 426):

(13) Er gibt roten e_i und sie gibt blauen [Seidestoffen keine Chance]$_i$
He gives red and she gives blue silk-materials no chance

In a derivational approach we must assume that a lexical array, the initial state of a derivation, undergoes whatever merge and movement operations are necessary before Spell Out, the output of which feeds the PF component. Only after PF do we know whether any ellipsis has been generated, as ellipsis in my proposal occurs in PF as a result of NON-PHONOLOGICAL REALIZATION OF FEATURES. Hence, the syntactic operations necessary for the realization of Case, which determine in German what morphological ending(s) will be realized in PF, have already been completed before PF. In (20) the adjective ending *-en* as well as the nominal ending *–n* on *Seidenstoffen* would not occur in any Case but the dative when the noun is plural, thus providing evidence that syntactic derivation precedes deletion.[9]

4.1. Lexical arrays and subarrays in RNR

In Chomsky (1998, 1999) a derivation begins with a string of lexical items called a lexical array, not unlike the "base" of earlier government and binding

work (the differences will not be illucidated here). My assumption will be that an RNR construction like (14) is made up of two lexical arrays, each corresponding to a conjunct of the coordinate structure:

(14) $[_{TP}$ Sue wrote $[e_i]$ and $[_{TP}$ Sally read [long family letters]$_i]$

Following Chomsky (1998, 1999), I assume that a lexical array undergoes the syntactic operations Merge, Agree and Move, as needed for establishing the necessary relations between certain lexical items. These operations take place one phase at a time, one phase for each lexical array. Given that a construction like (14) requires two separate lexical arrays, it also requires at least two phases. RNR conjuncts are most frequently "full" lexical arrays and not just subarrays, but the latter also occur.[10] I will assume that every conjunct of an RNR construction which has TP or CP (clausal) status requires a complete, separate derivational phase, and those conjuncts which are subarrays are presumably derived together in one phase.[11]

There is another aspect of the derivation of coordinate structures which must be addressed before we can look at the derivation of RNR in more detail. It is what I call Coordinate Feature Matching (CFM), the topic of the next section.

4.2. Coordinate Feature Matching in RNR structures

A property of coordination that aids interpretation is the symmetry between conjuncts. In cases of coordinate ellipsis the symmetry must be so well defined that matching occurs. The ways that conjuncts match is discussed briefly in Klein (1981:75), and Lang (1984) develops an account of the semantics of coordination based on the notion of matching. It can be illustrated quite easily that the lack of matching in an elliptical coordinate structure leads to mis- or non-interpretation:

(15) a. Bill wrote$_i$ a letter and Barb *e_i/wrote on the computer ($write_1 \neq write_2$)

b. Sue always orders e_i but Sam usually declines/#dislikes [buttered popcorn]$_i$
(# = semantically ill-formed; *order* and *dislike* aren't symmetric)

c. Jill enjoys visiting relatives, but Joe doesn't (enjoy it/them)
either: Jill enjoys going to visit relatives, but Jim doesn't enjoy going to visit relatives
or: Jill enjoys relatives who come for a visit, but Jim doesn't enjoy relatives ...[12]

(15a) is uninterpretable with Gapping because each conjunct requires a different definition of *write*. But the mixing of two *writes* is not allowed in Gapping. In (b), a case of RNR, only verbs like *decline* are acceptable because the two verbs

must match in certain key ways. In (c) there are at least two ways to interpret *visiting relatives*, as implied by the two elliptical objects *it* and *them*: either Jill and Joe go to visit relatives (the 'it'), or the relatives come to visit (the 'them'). The crucial point is that if *it* is used in the second conjunct, then *visiting relatives* must be interpreted in **both** conjuncts as 'going to visit relatives'. If *them* is used, then both Jill and Joe had visitors over. In other words, the conjuncts must match in the interpretation.

It has often been assumed in the literature that the recovery of ellipsis as in (15) proceeds by way of a copying mechanism, which would presumably be phonologically based. Other cases of ellipsis indicate, however, that in coordinate structures, for which I am proposing feature matching, recovery is not phonologically based. As Williams (1977) points out, there are two possible interpretations of (16), one based on phonological identity, and another, called "sloppy identity," based on something else:

(16) [$_{C1}$Joe$_i$ thinks that Bill likes him$_i$] and [$_{C2}$ Mary does too]
C_2 = either: (a) "Mary thinks that Bill likes Joe, too"
or: (b) "Mary$_i$ thinks that Bill likes her$_i$"

Given the fact that phonological identity cannot be the basis of (b), we must assume that there is a semantic basis for the recovery of the elliptical VP. If we assume that recovery in coordinate ellipsis proceeds on the basis of feature matching, features of syntax, semantics as well as phonology, then a solution is available: The recovery of gaps occurs when a certain minimum number of features match, be they only phonological, or a combination of phonological, semantic and syntactic features. The PRINCIPLE OF FULL INTERPRETATION in RNR and all elliptical coordinate constructions requires that certain feature clusters in conjuncts must match for the occurrence and recovery of an ellipsis.[13]

We move on now to a closer look at how coordinate symmetry is determined in an RNR construction.

4.3. Feature matching in RNR and derivation by phase

In this section we turn to the matching relations required for the derivation of the typical RNR structure, one with clausal conjuncts. I will argue that CFM is not a separate operation but is rather the logical consequence of conjunction. In my proposal conjunction does nothing more than join structures in which syntactic operations are carried out independently of conjunction. In other words, conjunction does not set up any syntactic domains.[14] Ellipsis is the result of the matching of features, as just discussed. When matches are possible within the parameters of the syntax, then ellipsis is an option. When this option is taken, then certain licensing and recovery operations must occur. Recovery requires the matching of features. Because conjunction defines the domains in which the

matches must be made, there is an inter-relation between ellipsis and conjunction which makes coordinate ellipsis distinct from ellipsis in non-coordinate structures. In the typical RNR construction the extension of Case checking from one conjunct to another, as is necessary with conjoined objects of a verb for instance, is not typically necessary, as Case checking occurs independently in each conjunct. However, conjunction in RNR must often assure that two DPs do indeed have the same Case. As indicated in (17), non-identical morphological Case forms are not tolerated in languages like German that are sensitive to such things:

(17) *Frank gehört $[_{nom}\ e]_i$ und Peter besitzt $[_{acc}$ einen großen Mercedes$]_i$
F.$_{dat}$ *belongs* *and P.*$_{nom}$ *owns* *a large Mercedes*

The derivation of this construction is prevented when CFM checks the features of the gap and the shared DP for matching features: both must have the same Case for the gap to occur. The mismatch in (17) prevents the deletion. This mismatch could be determined very earlier in the derivation, if we assume a derivational approach in which each conjunct is a phase. We turn in the next section to more details of derivation by phase in RNR.

4.4. Interfacing derivation by phase, CFM, and the prosody of RNR

In this section we look at how CFM interfaces with the prosody and derivational phases of RNR. I proposed earlier that the function of the NFI-feature in the derivation is to signal the point at which the non-realization of phonetic features begins. The coordinating conjunction in turn marks where nullified phonetic features end and where a new phase in the derivation begins, in cases where a conjunct equals a phase. Otherwise, the NFI-feature signals where elements with nullified phonetic features occur. These can be a subarray or a single lexical item as small as a bound morpheme. For (18) we expect the derivation in (19):

(18) Sue writes and Sally reads long family letters
(19) The derivation of (18) in phases:
Lexical array 1: $[_{VP}$ *Sue write long family letters*]
Phase 1: → Raise (subject and verb), Agree, Tense:
$[_{TP}$ *Sue write.*$_{pres.}$ *long family letters*]

Lexical array 2: *and* $[_{VP}$ *Sally read long family letters*]
Phase 2: → Raise (subject and verb), Agree, Tense:
$[_{TP}$ *Sally read.*$_{pres.}$ *long family letters*]

Phase 3: → Conjoin, match, mark for ellipsis and prosody, PF:
Sue writes ▫ ~~*long family letters*~~ *and Sally reads* ▫ *long family letters*

Phase 1 needs no further comment. We note about Phase 2 that it operates on a lexical array that begins with *and*. The function of *and* is to conjoin, which means that the possibility exists for some form of matching, and that certain symmetries are to be expected. In our example *long family letters* in conjunct one matches an identical DP in the second conjunct.

Let's look at phase 3 more carefully. My assumption is that whenever a coordinating conjunction is selected, then CFM is induced automatically. CFM is a reflex of the economy of derivation principle: It identifies any matches which allow non-phonological realization, a short-cut in derivation. In (19) CFM finds a feature cluster in the second conjunct which matches a feature cluster in the first conjunct. Because both feature clusters occur at the right periphery, the first one can be marked for non-phonological realization, if the proper prosodic feature, the NFI, is inserted at this point.[15]

When CFM identifies a matching feature cluster and marks it to be phonologically null, it must also identify where the NFI-feature is added to the derivation. Given that RNR prosody cannot be determined until after conjunction occurs, this is the first point in the derivation at which the NFI-feature can be assigned to the construction, according to what is determined by CFM. In other words, the prosody of RNR is induced in the syntactic derivation, and at a precise point in this derivation. That point is, logically, when conjunction and CFM occur. Unless the derivation proceeds in phases, as I argue here, this kind of sequencing is not possible. Furthermore the NFI-feature is not available for marking the position where the non-realization of phonological features occurs unless these features are at the right periphery of the first conjunct, simply because the NFI, as a prosodic feature, is functional as a signal of non-completion only in this position in a clause.

Once CFM and phase 3 is complete, the derivation enters PF and comes out with the now familiar prosodic and phonological features, including of course the distinctive ellipsis. It is obvious that much hinges on CFM at this step in the derivation.

5. Conclusion

In conclusion, my account rests primarily on the prosodic features of RNR because these are the most constant and appear to occur universally. However, my account does not ignore the syntactic aspects of RNR constructions, a shortcoming of other accounts like Hartmann (1998). Rather, I show how the minimalist approach to syntax provides the derivational mechanisms that are needed for interfacing the prosody and syntax of RNR. With derivation by phase, the syntactic and semantic features can be interfaced with the prosody of RNR when conjunction occurs, but before the derivation enters PF. In this way, the prosody itself identifies the lexical items whose phonological features do not

have to be realized and therefore do not have to enter PF. In this way prosody licenses ellipsis and the derivation is economized, which is the ultimate purpose of ellipsis to begin with.

Notes

[1] Research of a very different sort outlined in Dubinsky et al. (2000) has independently shown that coordinate feature matching plays a crucial role in the processing of coordinate structures.

[2] For other examples of how RNR can violate syntactic constraints, see Hartmann 1998.

[3] Norvin Richards pointed out to me (p.c.) a construction type that appears in Collin Phillips' dissertation that is like (i):

(i) The people who liked e$_i$ outnumbered by the thousands the people who disliked [Stephen King's new novel]$_i$

This is not a coordinate construction, if we assume that a coordinate construction must have either an overt or covert coordination conjunction. But it nevertheless has obvious parallel structures and does qualify for the kind of feature matching presented in §3.2 that recovers an RNR gap, if we assume that the verb *outnumbered* has the same function as a coordinating conjunction. The notion that verbs and coordinating conjunctions have properties in common follows from the similarities of (i) to a coordinate structure and from the fact that both occur with a complement (verbs optionally), if we call a conjunct a complement of a coordinating conjunction. What is clear about this construction -- and significant for the theory of RNR based on prosody presented here -- is that the gap occurs at the right periphery of the embedded clause, just as the shared elements do, and furthermore, the gap is accompanied by the prosody that is found in typical RNR constructions.

Another construction from Chomsky 1982 with similar properties is:

(ii) George is a man who everyone who meets *t* knows someone who likes *e*

Cowper (1985:75-76) argues that (ii) is a case of a parasitic gap construction. I believe it is better analyzed as an ATB wh-gap construction. In te Velde (in press) I present arguments for distinguishing the two construction types, and in te Velde (in prep) further arguments are presented for the claim that verbs have at least one property of a coordinating conjunction. However, I also argue that verbs and subordinating conjunctions must be distinguished on most counts from coordinating conjunctions (see note 14).

[4] See Koutsoudas (1971) for a list of languages that he claims don't have RNR. Thanks to Ed Zoerner (p.c.) for this information. In (i) are given examples from eleven languages representing at least seven different language families:

(i) a. Pieter schrijft een lang [e_i] en Karel een kort [opstel]$_i$ (Dutch)
P. wrote a long and K. a short article

b. Peter besucht heute ein kleines [e_i] und Georg ein großes Museum$_i$ (German)
P. visits today a small and G. a large museum

c. Pierre a acheté [e]$_i$ et Paul (a) lu [le livre]$_i$ (French)
P. aux. *bought and Paul* (aux.) *read the book*

d. Bill kupil bol'šuju [e]$_i$ a Dŷo (kupil) malen'kuju [knigu po fizike]$_i$ (Russian)
Bill bought large "but" Joe (bought) small book on physics

e. Yo tomo muchas [e_i] y tú tomas pocas naranjas$_i$ (Spanish)
I take many and you take few oranges

f. Anita hallgatja [e]$_i$ es Péter pedig olvassa [a híreket]$_i$ (Hungarian)
A. listens-to and P. CONTRAST reads the news

g. John wa hon o [e]$_i$ (soshite) Mary wa shimbun o [mai asa yomu]$_i$ (Japanese)
J. TOP. *book* ACC (*and*) *M.* TOP *newspaper* ACC *every morning reads*

h. Peter-neun keun chaek-ul [e]$_i$ (geurigo) Paul-eun jageun chaek-eul [sa-ass-ta]$_i$ (Korean)
*P.*TOP *large book.* ACC (*and*) *P.*TOP *small book.*ACC *bought*

i. Ahmet Hasan karides-i [e]$_i$ Mehmet te istiridye-yi [ye-sin isti-yor]$_i$ (Turkish)
A. H. shrimp.ACC *M. and oyster*.ACC *eat*.SUBJUNCT *want*.PRPROG

j. O Petros agorase ena megalo [e]$_i$ ke o Giannis ena ikro [biblio]$_i$ (Modern Greek)
"The" Peter bought a large and "the" G. a small book

k. wo zhishi ting-shuo-guo [e]$_i$ dan Akiu kan-dao-guo [na ge nianying mingxing]$_i$ (Mand. Ch.)
I only hear-say-EXP *but Akiu see-reach*-EXP *that* CL *movie star*
'I only heard but Akiu saw the movie star.'

I wish to thank my informants for their help with the data: Geert Booij, Dutch; Frédérique Knottnerus and Jean-Charles Khalifa, French; Beáta Bacskay and Miklos Gaspar, Hungarian; Tatsuya Fukushima, Japanese; Eungcheon Hah, Korean; Victor Dmitriev, Russian; Lucero Gavin, Spanish; Jaklin Kornfilt, Turkish; Andy Wilcox, Modern Greek; Niina Zang, Mandarin Chinese.

[5] I have been able to ascertain this prosody for all of these languages with the exception of Korean. In written language a comma occurs where the intonation break occurs in speech. I omit the comma throughout for the sake of simplicity.

[6] There are language-specific parameters which can nevertheless make RNR impossible or infelicitous. This occurs in German because of its OV parameter. In French the possibility of interpreting *un gros* in (i) makes RNR impossible in this construction:

(i) *Pierre a acheté un gros [e_i] et Paul (a acheté) un petit livre$_i$
P. bought a large and P. (bought) a small book

[7] It is interesting to note that the two elements Joe has are sufficient as a remnant in RNR if (i) has receives focus accent and is contrasted with *has not*, or (ii) the remnant is combined with a subordinating conjunction:

(i) Joe HAS and Jim has NOT loaned his best friend a book on physics
(ii) Jill said that Joe has and Jim has not loaned his best friend a book on physics
(no focus accent required)

I will not consider (i) support for Hartmann's theory of RNR based on focus accent as the fact remains that focus accent is not a requirement in (ii), nor in other RNR constructions.

[8] A crucial difference between the function of the NFI-feature and the Q-morpheme of Cheng & Rooryck is that the NFI-feature occurs in a coordinate structure and therefore can rely on Coordinate Feature Matching (cf. §4.2) for recovery and licensing of the gap.

[9] This observation does not, however, lead us to the conclusion that ellipsis in RNR is morphologically driven. Rather, abstract Case is sufficient for this ellipsis. To make this clear, we consider the precise steps involved in the derivation of a typical RNR construction.

[10] An example would be:

(i) Peter glaubte, dass er [$_{vP}$ den Aufsatz [$_{VP}$ gut geschrieben [e_i]
P. believed that he the essay well written
und [$_{VP}$ rechtzeitig abgeschickt [hatte]$_i$]]]
and timely sent-off had

Note that in (i) the conjuncts are VPs with only one adverbial each and no complement; the DO has raised to the vP. The shared element and all that needs to be recovered is the auxiliary hatte. This construction actually has another gap and a trace of den Aufsatz generated when the second [VP] is merged:

(ii) Peter glaubte, dass er [$_{vP}$ [den Aufsatz]$_j$ [$_{VP}$ t_j gut geschrieben [e_i] und [$_{VP}$ [e_j] rechtzeitig abgeschickt hatte$_i$]

[11] This point brings up a related question: To what extent can the derivation of a coordinate structure be accomplished in one phase? Obviously a coordinate structure which is made up of two lexical arrays requires at least two phases. But does conjunction itself also constitute a separate phase, even when the conjuncts are clearly subarrays or simply verbal complements, or as in the case of (22), verbal heads? This is a question that would have to be addressed in detail and therefore is not within the scope of this paper.

[12] The 'it' in the elliptical VP could also mean *Joe doesn't enjoy going to visit relatives*, in which case the first conjunct must be interpreted as *Jill enjoys going to visit relatives*.

[13] The recovery of ellipsis is a bit more restrictive than what (16) implies. Notice that in the equivalent structure given in (i) but with an added subordinate clause, sloppy identity is no longer available:

(i) [C1 Joe thinks that Bill likes him] and [C2 Mary thinks that he does too]
C2 = only "Mary thinks that Bill likes Joe too" ≠ "Mary, thinks that Bill likes her,"

The reason the second interpretation is not possible can be explained if we assume 1) that feature matching lies at the basis of interpretation in ellipsis, and 2) that anything less than perfect identity is ruled out if coordinate symmetry somehow becomes opaque or non-existent, for instance when a subordinating conjunction occurs as in (i). Although it is a fact that RNR is possible across a subordinating conjunction like *while* which has only rather neutral semantic properties, I showed earlier in (4) that when coordinate symmetry is not transparent, RNR is not possible. In short, the less transparent the coordinate symmetry, the closer the identity must be in recovery. Note that (i) is perfectly structurally symmetric -- both conjuncts have an embedded *that*-clause -- so lack of symmetry is not the problem with it. Rather, the unavailability of sloppy identity must be ruled out by purely syntactic constraints on matching, caused by the CP node which cannot be bridged in Verb Phrase Ellipsis. Note, however, that CP nodes are not ipso facto barriers to matching:

(ii) Welches Bild [CP hat Karl *t* gemalt, [CP wollte Fritz nicht *e* sehen und [CP konnte Hans nicht *e* interpretieren]]]?
Which picture has K. painted, wanted (to) Fritz.NOM *not see and could H.*NOM *not interpret*?

This point was made in (2), where intonation easily provides the "bridge" over a CP node in RNR.

[14] My proposal is based on the assumption that coordinating conjunctions do not project, unlike subordinating conjunctions. Hence, a conjunct is not a syntactic projection or domain of the coordinating conjunction, in contrast to the relation of a subordinating conjunction to a subordinate clause. For more on this, see te Velde (2000).

[15] Note that word order parameters which determine what can occur at the right periphery determine what is eligible for RNR ellipsis, as evident in:

(i) *Frank musste e, verbessern aber Peter konnte [seine Aufsätze], sofort abschicken
F. had-to revise but P. could his essay immediately off-send

Because of the OV parameter in German, *seine Aufsätze* does not occur at the right edge of the first conjunct; therefore, it is ineligible as an ellipsis in RNR.

References

Booij, Gert. 1983. "Principles and Parameters in Prosodic Phonology," *Linguistics*, **21**: 249-280.

---. 1985. "Coordination Reduction in Complex Words: A Case for Prosodic Phonology," in: H. van der Hulst and N. Smith (eds.), *Advances in Non-linear Phonology*. Dordrecht: Foris.

Cheng, Lisa L.-S. & Johan Rooryck. 2000. "Licensing *Wh*-in-Situ," *Syntax*, **3**.1:1-19.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.

---. 1998. "Minimalist Inquiries: the framework," *MIT Occasional Papers in Linguistics* 15. Cambridge: MIT Press.

---. 1999. "Derivation by Phase," *MIT Occasional Papers in Linguistics*, **18**. Cambridge: MIT Press.

--- & Howard Lasnik. 1993. "The Theory of Principles and Parameters," in: Jacobs, et al. (eds.), 506-569.

Cowper, Elizabeth A. 1985. "Parasitic Gaps, Co-ordinate Structures and the Subjacency Condition," *Proceedings of the Northeast Linguistic Society*, **15**:75 – 86. Amherst, MA: GLSA.

Dubinsky, Stanley, Marie Egan, A. René Schmauder, and Matthew J. Traxler. 2000. "Functional Projections of Predicates: Experimental evidence from coordinate structure processing," *Syntax*, **3**.3:182 – 214.

Goldsmith, John A. (ed.) 1995. *The Handbook of Phonological Theory*. Cambridge, MA: Blackwell.

Hartmann, Katharina. 1998. *Right Node Raising and Gapping. Interface Conditions on Prosodic Deletion*. Ph.D. Diss., University of Frankfurt.

Inkelas, Sharon & Draga Zec. 1995. "Syntax-phonology Interface," in: Goldsmith (ed.), 535-549.

Jacobs, Joachim, Arnim von Stechow, Wolfgang Sternefeld & Theo Vennemann (eds.) 1993. *Syntax – An International Handbook of Contemporary Research*. Berlin/New York: Walter de Gruyter.

Kayne, Robert. 1994. *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.

Klein, Wolfgang 1981. "Some Rules of Regular Ellipsis in German," in: W. Klein & W. Levelt, (eds.), *Crossing the Boundaries in Linguistics*, 51 – 78. Dordrecht: Reidel.

Koutsoudas, Andreas. 1971. "Gapping, Conjunction Reduction and Coordinate Deletion," *Foundations of Language*, 7:337 – 86.

Lang, Ewald. 1984. *The Semantics of Coordination*. Amsterdam: John Benjamins B. V.

Swingle, Kari A. 1993. *The Role of Prosody in Right Node Raising*. Ms., University of Santa Cruz.

Toman, Jindřich. 1984/85. "A Discussion of Coordination and Word Syntax," in: J. Toman (ed.), *Studies in German Grammar*, 407-32. Dordrecht: Foris.

te Velde, John R. 2000. "Assumptions about the Structure of Coordination," in: K. Schwabe & N. Zhang (eds.), *Ellipsis in Conjunction*, 51 – 78. Tübingen: Niemeyer.

---, in prep. *Feature-Driven Coordination: Derivation by phase, merge, match and elide.*

---, in press. "Deriving ATB Constructions without ATB Movement."

Williams, Edwin. 1977. "Discourse and Logical Form," *Linguistic Inquiry*, **8**.1:101 – 139.

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Learnability and direction of convergence in Cham: the effects of long-term contact on linguistic structures

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1.0 Introduction. Despite the fact that Cham has been spoken on the coast of Vietnam for over two thousand years, the structures of the Austronesian language Cham, spoken in Vietnam are strikingly transparent semantically and structurally—a highly learnable language reminiscent in many regards of an early creole. The question is why? Although it is quite evident that the language was heavily influenced by intense contact with the Mon-Khmer languages of Vietnam, there is no historical data to suggest Cham ever underwent a pidginization stage; thus, there is no basis for attributing Cham s transparency to development from an earlier pidgin. The temptation to account for this transparency through a pidgin-to-creole scenario is further undermined by the retention in Cham of various pieces of archaic structure in the more formal registers.

Instead, this paper argues for another scenario, namely, that the highly learnable, strikingly transparent structures of Cham are the result of long-term contact. Cham has undergone two thousand years of unending, unrelenting language contact. The historical evidence, both linguistic and non-linguistic alike, makes it clear (Thurgood 1999) that wave after wave of Mon-Khmer speaking peoples not only learned Cham as a second language, but many of these subsequently shifted to Cham. At the same time, the speakers of Cham frequently learned various Mon-Khmer languages, including most recently Vietnamese. During much of this period, Cham was the dominant language in the region, often serving as a lingua franca. In this paper, in general terms, it is argued that the structures of modern Chamic are a natural outgrowth of the patterns of language contact; more specifically, because for roughly two thousand years, Cham was spoken in a situation in which language acquisition and language shift were a central part of the linguistic landscape, the relative learnability of

various structures became one of the most influential determinants of the direction of language change.

As Slobin (1977) and others have pointed out, there is a natural tension between semantic transparency and processing ease, on the one hand, and processing speed and discourse pragmatics, on the other. Further, in the earliest stages of language acquisition, the need for semantic transparency and processing ease takes precedence over processing speed and discourse pragmatics with the shift in focus to a concern with processing speed and discourse pragmatics coming only later. Pidgins and early creoles show a similar preference for semantic transparency and processing ease over processing speed and discourse pragmatics. With grammaticalization, there is a phylogenetic parallel: the early stages of grammaticalization are characterized by semantic transparency, while the later stages this transparency has been exchanged for processing speed.

Thus, the notion of relative learnability has concrete correlates in the literature on first language acquisition, on second language acquisition, on pidgins and creoles, and in the literature on grammaticalization. In first language acquisition, the more learnable structures are those associated with with earlier, rather than later, acquisition (Slobin 1977; Givón 1979). In second language acquisition (SLA), it is again, the structures found in the earlier, rather than later, stages of second language acquisition that are more learnable (cf. Dittmar 1992). In the literature on pidginization and creolization, it is the structures associated with earlier, rather than later, creolization that are more learnable (Givón 1979). And, although we are no longer talking strictly about language acquisition, in the literature on typology it is precisely those structures associated with early grammaticalization that are more learnable, while those found with the later stages of grammaticalization are less so (Bybee et al. 1994). That is, phenomena common to the early stages in these literatures are assumed to be more learnable; phenomena common to later stages, less learnable.

In fact, the structures of Modern Cham reflect the same

types of constraints as are found in early SLA. In early SLA, Bates and MacWhinney (1981, 1987), invoke the notion of limited-capacity processors, noting that as a consequence learners first tune to the communicative intent of the message; only later is attention turned to mastery of other aspects of coding. In his Input Processing Model, vanPatten (1996) also describes learners as "limited-capacity processors", observing that second language (SL) learners process for meaning before form, more specifically, for content words before grammatical words and for more meaningful grammar before less meaningful. Only when learners are able to process informational or communicative content at little or no cost to attention do they pay attention to form.

The paper itself is organized around two basic notions central to early grammar, whether it be in first language acquistion, second language acquisition, early creoles, or early stages of grammaticalization: that is, the preference for semantic transparency and isolatable units, and the preference for processing ease over processing speed.

2.0 Semantic transparency and isolatable units.

The preference for semantic transparency associated with readily isolatable units is manifested throughout Cham.

2.1 Acoustics and segments. Cham is an analytic language, that is, morphemes never consist of less than a syllable and, overwhelmingly, are phonologically separate words. Aside from the possibility that the causative-marking *pa-* is still marginally productive, there is no affixal verbal morphology. As a result, the morphemes are maximally salient phonologically.

This Cham preference for the analytic is paralleled by the preferences of English-speaking children, who, upon realizing that the component parts of contracted auxiliaries can be recast more analytically, go through a period in which they use forms like *I will* in place of *I'll* (Slobin 1977:190-191). Slobin explains this preference for more analytical forms as motivated by the desire for acoustically salient and readily isolatable units, allowing an easier mapping of form and

content. Similar tendencies have been observed in adult second language learners in the early stages of English acquisition. In fact, an initial preference for analytic units characterizes first language acquisition, second language acquisition, early pidgins and creoles, and early stages of grammaticalization.

2.2 Aspect and tense. Basic aspectual distinctions are optionally marked in the verb morphology; tense is not a category. Cham often uses the transparent forms *tɔ̀ɔʔ* 'live; stay' > 'still' > 'PROGRESSIVE' and *plɔ̀h* 'finish' > 'PERFECTIVE' to distinguish ongoing states and activities from completed ones, not just on the verbal level but also on the clausal level.

In (1) *tɔ̀ɔʔ* 'PROGRESSIVE' is an auxiliary verb indicating the continuance of a state; and in (2), the progressive begins a clause, marking the overlap of the activities in this paragraph and the activities in the previous paragraph.

(1) ñu ʔyəʔ boh tɔ̀ɔʔ kədɔɔŋ tha tràỳ ənɨʔ. (6.1.16)
she look see stay remain one CLF child fish
'She looked and found one small fish remaining.'

(2) tɔ̀ɔʔ MəKaam təpiàʔ truh məthĭl (6.1.186)
stay Kam go.out away palace
'Meanwhile Kam had left the palace'

(3) plɔ̀h tĭ nan oŋ paliiʔ twà tàŋ təlay kapwàʔ. (6.2.15)
finish PREP that sir roll two CLF string silk
'After that he rolls two strings of silk'

In (3) *plɔ̀h* 'finish; finished' temporally relates two clauses.

In short, Cham s aspectual marking represents early grammar. In first and second language acquisition, aspectual marking precedes tense marking. In early creoles, the same preference for aspectual marking manifests itself.

2.3 Semantically transparent constructions. Many Cham constructions are periphrastic in nature using semantically transparent components: a causative from 'make,' a permissive from 'give', a quotative from 'say', the aspectual

markers from 'stay; live' and 'finish' (mentioned above), a reflexive from 'body,' recipient, experiencer, and change-of-state marking from 'get; receive', locative nouns from nouns meaning 'top', 'bottom', and 'back', and prepositions that mark only the most basic relationships, e.g., 'INSTRUMENTAL' and 'BENEFACTIVE'.

Causation and causatives. Several different morphemes are used to mark causation in Cham but the only affixal causative is the prefix *pa-*, inherited from PAn, which converts intransitives into transitives, adding an additional argument, for example, *mətaay* 'die' > *pa-mətaay* 'kill'. It is unclear, however, whether the affixation of *pa-* is productive, or if it is a frozen prefix limited to a restricted set of verbs.

In the texts, most causatives are periphrastic, with the most common being with *ŋaʔ* < 'make', often used literally; in (4), however, *ŋaʔ* has a clearly causative sense.

(4) (ø) twàh prùʔ ŋaʔ pa-càl. (6.1.71)
(ø) seek work make CAU-busy
'(she) looked for work to keep her busy.'

The permissive from *pràỳ* 'give' is also periphrastic.

(5) min əmɛɛʔ MəKaam oh pràỳ naaw (6.1.70)
but Mom Kam NEG give go
'but Kam's mother would not let her go,'

(6) pràỳ ka tàhlaʔ likaw ʔyəʔ bɔɔʔ. (6.1.76)
give for me beg look cheek
'Please let me see her.'

Aside from its frequent main verb sense, in (5) it is an auxiliary with a permissive meaning; and, in (6) it is again periphrastic but the sentence has also gone from transitive to ditransitive.

Quotative from 'say'. For both direct and indirect quotes, quotative clauses are usually preceded by the quotative *lay?*, a morpheme obviously related to the verb *lay?* 'say'.

(7) muu? doy? kol kəmay tèra nan dom lay? (6.1.158-59)
grandmother run hug woman young that speak say
'The woman ran, hugged the young girl and said, " "'

In (7) the quotative *lay?* 'say' occurs immediately after *dom* 'speak', another verb of saying.

Reflexives and reciprocals. Cham reflexives are marked with *trày* /trɛ̀y/ 'self', making them maximally transparent and thus maximally learnable. Joint action is marked explicitly with *càa? kàw?*, from *càa?* 'mutual' plus *kàw?* 'other'. And, reciprocal action is marked by using *kàw?* 'other', which in certain contexts is extended to mean 'together' or 'each other'.

(8) plɔ̀h twà hətyu? pəthaaŋ kol kàw? hya cɔ?. (6.1.180)
finish two wife husband hug other cry cry
'Then the husband and wife hugged each other, crying.'

Note that in example (8) *twà* 'two' indicates that the husband and wife form a group.

Experiencer marking. Subjects are normally actors, not experiencers, but Cham has evolved a simple strategy for labeling subjects as recipients or experiencers without changing the word order or using elaborate morphology: it uses *mɨ?* 'get; receive' as an auxiliary verb (9).

(9) MəHlə? mɨ? hu rilo, (6.1.5)
Hlok get have many
'Hlok caught a lot of fish.'

(10) muu? mɨ? ŋa? on tèlam tyaan (6.1.146)
Grandmother get make happy in stomach
'She became happy.'

The recipient marking *mɨʔ* developed from the verb *mɨʔ* 'get; receive', as in (10). It still exists as a main verb with the meaning 'get'. The path from marking recipients to marking experiencers is suggested in example (10), where emotions are treated as the movement of a feeling into one of the major organs of the body, a development found widely in Southeast Asia.

Transparent locatives. As is true for a number of the languages of the area, locative nouns do much of the work that is done by prepositions in English. The locative nouns are syntactically identical to genitive constructions, consisting of two juxtaposed nouns with the possessor preceding the possessed. Usually, but not always, the locative noun is preceded by a 'true' preposition, often the very general preposition *tì*, doing little more than marking the prepositional nature of the locative noun.

(11) mɨŋ likuuʔ kǐŋ (6.1.38)
from back kitchen
'at the back of the kitchen'

The essential meaning is clear just from the locative noun construction—the noun means 'top', 'bottom', 'back', or some such; from a learner's viewpoint, the preposition only serves to mark the unit as a prepositional phrase.

Semantically salient prepositions. Prepositions, as the older default class, are the most diffuse in meaning but seem to mark the more core-like oblique cases and, thus, the more salient categories: benefactive, source and goal, and non-subject experiencers as well as some basic locative marking.

The inherited benefactive marker *ka* 'for' is also often used to mark the subject NP of embedded clauses. The inherited *mɨŋ* 'from' marks sources and the innovated *tal* 'arrive' marks goals, often more specifically 'arrival at a goal'. Unlike the other prepositions and the locative nouns, *tal* had a

verbal origin, however, now it functions like a preposition syntactically and semantically.

Finally, the preposition *ti* 'to; at' does general duty. It seems to have a generalized locative function, including converting locative nouns into phrasal prepositions, but it also often codes a goal, including indirect objects in other than the subject slot. Its generalized locative function invites reference to a comment by Kay and Sankoff (cited in Slobin 1977:208) in which they note that when a pidgin has only two locatives, one marks the genitive and the other has a generalized locative function, with other prepositions developing later. In Cham, simple juxtaposition marks the genitive, while *ti* has the generalized locative function.

3.0 The preference for processing ease.

The preference for processing ease dominates Cham syntax, with its most obvious and most pervasive manifestation being Cham's rigid SVO word order (WO). The rigid SVO word order is the basis of almost all its syntax, paralleling the developments in SLA. In their Multidimensional Model, Clahsen (1984), Pienemann (1984), and Pienemann and Johnston (1987), note that SL learners begin with an extremely rigid WO, allowing more alternate WOs only much later when little or no attention needs to be allocated to basic production.

3.1 **The basic clause.** Cham has little morphology but a rigid WO: the two core arguments, the subject and the object, are only marked configurationally, but indirect objects must be overtly marked with a preposition, unlike Malay, for instance. The role of the arguments within the basic clause is, of course, primarily determined by the semantics of the verb but the basic identification of case roles is done by a combination of genitives, locative nouns, prepositions, and serial verb constructions, augmented by an experiencer constuction in the verbal morphology (already discussed) and devices for marking reflexives and reciprocity (also already discussed). Thus, the three morphological systems, largely complementary but occasionally overlapping, serve to mark the oblique cases: Locative nouns phrases, with a locational noun as their head,

mark stationary location. Co-verbs, derived from motion verbs, not surprisingly tend to mark directional motion, among other things. Prepositions, the default marking, occur with everything not marked by the first two systems and with the more core-like oblique cases. In all cases, the marking is relatively transparent.

Retention of subject pronouns. The transparency of the SVO clausal unit is augmented by the retention of subjects (except where subject deletion serves to mark cohesion between clauses). For instance, Bates has (1976) noted that, despite the normally optional nature of subject pronouns in Italian, Italian children go through a stage in which the subject pronoun is always expressed. The fact is a rigid WO with overtly expressed subjects makes a language more learnable.

Configurationally marked genitives. As with early language acquisition and with many creoles, the genitives are marked by simple juxtaposition, with the head noun first and the genitive following, e.g. *əmɛɛʔ MəHləʔ* 'mother + Hlok' = 'Hlok's mother' and *həẗ̆wʔ təluyʔ* 'wife' + 'younger son' = 'wife of the younger son'.

3.2 Other sentence types. Most other sentence types are minimally altered variants of the declarative clause, generally modified by sentential particles at the periphery of the clause, thus keeping the basic clause configuration unaltered.

Questions. Questions follow the same word order as the corresponding declarative sentences. Questions answerable with a yes or no typically are signaled with nothing more than a rise in intonation on the last element in the sentence (Doris Blood 1977:42). Occasionally a yes/no question is signaled by the sentence-final particle *laay* 'Q'.

(12) aay takri laay (1977:42)
elder.brother want Q
'Do you want to?'

Content questions, like yes/no questions, use the same word order as the corresponding declarative sentences, but with the question word inserted in place of the questioned item.

(13) tə̀hla? wa? yaaw hlaay kay? (1977:45)
I write like what (specifically)
'How do I write it?'

Thus, in (13) the question word has been inserted where the corresponding element in a declarative sentence would appear.

Clause-final particles. Here as elsewhere in Cham, much of the work of identifying modes and moods is done by an abundance of sentence final particles which register a wide range of moods and functions. The advantage to the learner, of course, is alternate sentence types do not require the learning of anything other than the appropriate clause-final particle—and, in many cases, context alone is sufficient.

Negation. Sentence-final *o* 'NEG' is the most common colloquial way to express negation (Doris Blood 1977:40).

(14) mɨ kaw poy? o. (1977:40)
father I scold NEG
'My father won't scold.'

(15) min oh dom təpià?. (6.1.120)
but NEG speak out
'but didn't say anything'

In (15) the negation is before the main verb, which, as Doris Blood notes, is typical of more formal styles. The use of double negation, not surprisingly, correlates with intensity.

The match with second language acquisition is simple: the most colloquial matches the first stage in the acquisition of negation—utterance negation; the more colloquial, the closer to the language in its early acquisition. The more formal pattern is pre-verbal negation, the second stage in second language acquisition; this more formal register reflects the older, less contact-influenced register. Both are easy to learn.

Finally, intensification is done by using both markers at once—a delightfully straightforward example of iconicity.

3.3 Interclausal cohesion. Interclausal cohesion is accomplished by heavy reliance on iconic juxtaposition. In addition, the deletion of the coreferential subject may be used to show cohesion between two clauses. Interclausal cohesion may also be marked by clause-final particles. Without exception, clausal concatenation is highly learnable and readily processible.

Clausal concatenation. Cham clause concatenation involves little more than the juxtaposition of clauses with addition coherence supplied by context and augmented by iconic sequencing. Few textual examples exist of non-iconic action sequences. Further cohesion may be supplied when two or more juxtaposed clauses share the same subject through the deletion of the identical subject. Even further cohesion may be supplied through the addition of explicit markers at the clausal periphery. Thus, one also finds markers such as 'before', 'arrive', and 'finish' helping to mark the relationship of one clause to another.

Sentential complements. The basic clause does incorporate sentential complements, but when these occur they are usually in slots where the presence of a sentential complement is anticipated by the semantics of the verb such as verbs of ordering, thinking, seeing, and the like (ex. 16;6.1.147).

(16) muu? təkrɨ ?yə? [thay uraaŋ ŋa? lithay ka muu?].
g.mother want see [who person make rice for her]
'The woman wanted to see who had made rice for her.'

Beyond the semantics, nothing special marks these Cham complements as complements.

Wish- and want-clauses are slightly more complex because the subject of the complement clause is marked by *ka*, here labeled 'for' as it occurs elsewhere as a benefactive.

(17) məyah uraaŋ təkrɨ [ka kə̃ni mə̃ni syaam sap] (6.2.30)
if person want [for *kanhi* call good sound]
'If they want the instrument to sound good, '

It is not obvious that other clausal complements exist.

Relative clauses. Relative clauses are restricted to subject relative clauses; the mechanism is the same deletion of the coreferential subject found elsewhere to mark clausal cohesion. The relative clauses that exist function to designate locations, times, and the like. The data examined showed no distinct relative clause construction. Instead, the device used the subject deletion used for marking clausal cohesion. This lack is puzzling as the closely-related Western Cham has a relative clause construction with its own relative clause marker *kung*.

Purpose clauses. An explicit purpose clause exists which is marked with the grammaticalized *pyəh* 'in order to', which appears to be used when it might otherwise not be obvious to the listener (18). Fully as common, however, is the use of nothing more than a serial verb construction in which, given that the two clauses are being treated as connected, the purpose reading is inferable from the context (19).

(18) oŋ nan caaw kĭlɔɔŋ pyəh pa-tàŋ tha bɛʔ kàŋ (6.2.7-8)
sir that drill hole in.order.to CAU.stand one CLF post
'he drills a hole in order to erect an upright piece, '

(19) ...prày aaw khan...ka MəKaam naaw məthĭl
...give clothes...for Kam go palace (6.1.66-7)
'...gave clothes...for Kam to go to the palace.'

In either case, if the purpose clause has an explicit subject, as with *wish*-clauses, the subject is marked with the preposition *ka* 'for; BENEFACTIVE'.

Serial verbs. Serial verb constructions exist. Again, the mechanism involved is the deletion of coreferential subjects and the juxtapositions are overwhelmingly, but not exclusively, iconic. The semantics of the serial verbs, even when the frequency indicates they have apparently become

conventionalized, are transparent; not only are the verbs in question identical to main verbs in Cham but the connection between the serial verb use and the main verb use is readily deducible.

Serial verbs are simply a subset of the clausal conjoined verbs with a specific, conventionalized meaning. Thus, at least in Cham, the syntax is no different for these than for any of the other joined clauses, aside from this special conventionalized meaning for one (or both) of the verbs involved.

Sequential actions. Related sequential actions are usually no more than a sequence of clauses with the shared subject deleted in all but the first:

(20) pətaaw tàŋ, dii? yun, naaw thaaŋ. (1977:61)
king stand, climb.into hammock, go home.
'The king stood, entered his palanquin and went home.'

Were these the only such sequential clause juxtapositions one would treat them simply as conjoined verb phrases. However, in other concatenations the meaning is consistent with the meaning of a single clause and one of the verbs behaves, not as a verb, but as preposition. In Cham several areas have exploited these serial verb constructions: in particular, the directionals and the co-verb constructions.

Directionals. Directionals are co-verbs (prepositions < verbs), developed from commonly used motion verbs. In these constructions, they can no longer be negated as can verbs, nor can they have any aspectual marking, and so on. The two most common co-verbs developed from the least marked motion verbs *naaw* 'go' > *naaw* 'motion away from the center of action' and *maay* 'come' > *maay* 'motion towards the center of action'.

(21) MəHlə? pà cərɔ? naaw thaaŋ (6.1.17)
Hlok take charok go > DIR house
'Hlok took the fish home.'

Note that the semantic change involved is minimal: the transition is from literal movement away from the center of interest to figurative movement away from the center of the stage and the sequencing is iconic.

Other directionals have also developed: for example, 'get up; rise up' > 'up' and 'go down; descend' > 'down'.

Other serial verbs. Other serial verbs have evolved along their own paths. In certain serial constructions, the verb *tuy* 'follow' developed the meanings 'with' and 'according to'.

(22) ñu pa-pɔɔʔ pà tuy (6.1.51) export
she CAU-wrap take with < follow
'she wrapped up the shoes and took them with her.'

Other concatenations. Sequential concatenations have also developed special readings in other semantic domains without developing into co-verbs. The verb *ŋaʔ* 'make', when in a following clause, often takes on the meaning 'become'.

What marks all these Cham constructions is their semantic transparency, the relative lack of morphological marking, and the high dependence on iconicity. The source morphemes still exist as such and the path of development is transparent, and, thus, easily learnable.

4.0 The lack of discourse restructuring.

Much of the complexity of grammar correlates with the backgrounding and foregrounding of discourse pragmatics, that is, with what Fillmore (1968) once termed secondary topicalization. Fillmore's use of the term 'secondary' certainly has ontological validity. For first language acquisition, Slobin (1977:21) argues that "Apparently grammar develops, both in creoles and in children, to fulfill more communicative needs than the direct expression of propositional content." It is not altogether surprising that the expression of content has a higher priority than discourse considerations and that the concern with the latter comes later.

As might be expected of a language serving until recently as a lingua franca, Cham tends to maintain its rigid SVO order. With the emphasis on basic comprehension and basic processing, a minimum of special syntactic machinery is devoted to discourse concerns: in fact, Cham seems to have only those discourse pragmatic markers common to almost all languages: topicalization, left dislocation, and a presentative.

Cham depends heavily on simple devices to serve the needs of comprehension. Sequencing is done primarily through juxtaposition and iconic sequencing, with addition cohesion supplied through the deletion of co-referential subjects in related clauses and the use of clause initial or clause final markers. The referent-tracking crucial to comprehension is done more through the use of indexicals, which index social and personal identity, and classifiers, which index objects and classes of objects, than through pronouns, which carry significantly less information.

4.1 Topicalization < equational sentences. Explicit topicalization in Cham uses a construction in which the topic is marked with the word *nan* 'that'. The construction itself originated in equative sentences. Note that a nominal sentence takes a known entity and comments on it, as in (23).

(23) MəKaam MəHlə? nan twà ətày aay (6.1.1)
Kam Hlok that two y.sib e.sib
'Kam and Hlok (were) two sisters'

(24) oŋ nan nan uraaŋ toy. (1977:63)
mister that that CLF guest
'That gentleman is a guest.'

(25) pətaaw Taluy? ŋa? nan oh ?jɔw? pətaaw pya? o.
king Taluch do that NEG correct king real NEG .
'King Taluch's behavior was not that of a true king.'

In (24) we see the extension of this equative construction to a topic-comment construction. Under her brief discussion of topic-comment sentences, Doris Blood (1977:63-64) notes the first part of (24) presents the topic under discussion while the

second part comments on it. In (25), we see the topic-comment structure quite distinct from an equational sentence (1977:64).

4.2 Presentative. Presentative clauses (or, existential clauses) introduce new entities onto the main stage. In the main verb uses, the subject appears in normal position before the verb *hu* 'have; get'. The WO is iconic.

(26) hu təmuh tha phun məkya (6.1.124)
have grow one CLF ebony
'(there) grew an ebony (or kya) tree'

(27) hu tha uraaŋ cam [ŋaʔ kə̃ñi khɔ̀h lo] (6.2.21)
have one CLF Cham [make kanhi skillful very]
'There is a Cham who makes the *kanhi* very skillfully.'

When used as a presentative, as in (26), although various adverbials may occur in the 'vacated' preverbal subject slot, the subject itself is found post-verbally.

Sentences in which both the topic and the comment are 'new' complicate sentence processing. Even first language speakers prefer to separate the introduction of the newly foregrounded topic from subsequent comment on it. For low level second language learners, the preference for separating the establishment of a new topic from subsequent comment on it is even stronger. The presentative construction, of course, is a solution to this potential processing overload.

4.3 Left-dislocation. The one other Cham construction with a non-canonical word order is left-detachment.

(28) cərɔʔ əmɛɛʔ MəKaam ŋaʔ __ rilɔ baŋ plɔ̀h. (6.1.37)
charok mom Kam make ___ meat eat finish
'The charok, Kam's mother already made into food.'

The charok, a fish, has already been established as central to the scene, with the left-detachment functioning only to bring it back into focus.

Lambrecht (1994) notes that left-detachment is extremely common in the world's languages, suggesting that a device for bringing an already-established but not currently foregrounded topic to the forefront is, like the presentative, part of the minimal discourse machinery for a natural language.

4.4 Pronouns, classifiers, and indexicals. Most of the participant tracking in the text is done by indexicals, which, as mentioned earlier, index personal and social identity, and by classifiers, which index objects and classes of objects. Much more rarely pronouns are used but in the texts typically only when no possibility of ambiguity exists, usually because just a single major participant is being tracked.

Indexicals and classifiers. Indexicals index the social and personal identity of human participants and classifiers index the non-human participants. Certainly, as in other Southeast Asian languages, Cham classifier constructions play a major role in clarifying participant tracking. As in many languages, a full classifier construction may occur marking the initial mention of an important entity in the discourse, although in Cham this use is apparently limited to non-humans, but such uses are both optional and secondary. Overwhelmingly, the classifier serves as a sort of pronoun, parallel to the way that indexicals (nouns characterizing social roles such as grandmother, elder sister, stepmother, king, and such) are used in the place of pronouns. In fact, in the texts examined, pronouns are never used to track nonhumans; instead, the tracking is done with a combination of zeros (safely ignored in this discussion), CLFs, and, far more rarely, various (other) noun substitutes.

5.0 Conclusions

Cham is now a mainland Austronesian language that is distinctly different from the Austronesian languages left behind in the islands. A little of this is simply due to the normal course of historical change but most of the changes are the result of intense, long-term contact with the Mon-Khmer languages. The changes are intensified by the role that Cham played as a lingua franca for a better part of its long history. While much

remains to be learned about Cham, we already see quite clearly the imprints of extended contact on the way Cham packages propositional content.

Conversely, it is also possible to tell by a careful examination of Cham and its history that it has undergone extensive contact by careful examination of the structures involved. On the one hand, many of the Cham structures are what might be termed highly learnable; on the other hand, many of the markers themselves are quite old. In the case of new constructions not only are the origins of the structure often readily apparent but also the central words themselves still co-exist as independent morphemes.The combination of new, more transparent grammar and older, more opaque grammar argues for long term contact, not prior creolization of a pidgin as part of its language history.

Thus, in Cham as in many of the world's languages, it can be argued that the 'early' or 'creolized' flavor to the structure of Modern Cham is an outgrowth of the natural advantage that the more learnable structures have in an intensely multilinguistic setting. A major contributing factor is the widespread tendency to reduce two (or more) languages to one whenever possible, often leaving the phonology, the syntax, and the semantics strikingly parallel, with the blatantly-distinguishable lexicon remaining to keep the various contributors to the amalgamation from realizing how similar the once distinct languages have become (Gumperz and Wilson 1971, Tadmor 1995, Thomason 1996, Thomason and Kaufman 1998). Thus, the survivial advantages given by increased learnability, coupled with the related drive to the structures of the languages in contact similar, are by themselves sufficient to bring about the appearance of 'early' creolization out of long-term, intense language contact.

In short, it is argued that the modern Chamic structures are a natural outgrowth of a linguistic situation in which language acquisition and language shift are such a central part of the linguistic landscape that learnability becomes one of the

most dominant determinant of the direction of language change.

It is further argued that it is possible, in the case of Cham, to tell that it has undergone extensive contact by careful examination of its structures.

References

Bates, Elizabeth. 1976. Language and context: The acquisition of pragmatics. New York: Academic Press.

Bates, Elizabeth and Brian MacWhinney. 1981. Second language acquisition from a functionalist perspective: pragmatic, semantic, and perceptual strategies. In H. Winitz (ed.), Native language and foreign language acquisition. Annals of the New York Academy of Sciences 379. Pp. 190-214.

Bates, Elizabeth and Brian MacWhinney. 1987. Competition, variation, and language learning. In Mechanisms of language change. Edited by B. MacWhinney. Hillsdale, N.J.: Erlbaum. Pp. 157-193.

Baumgartner, Neil. 1998. A grammar sketch of Western (Cambodian) Cham. Papers in Southeast Asian Linguistics No. 15: Further Chamic Studies. Pacific Linguistics. Series A-89. Pp. 1-20.

Blood, David L. 1967. Phonological units in Cham. *Anthropological Linguistics* 9.8:15-32.

Blood, David L. 1977. A three-dimensional analysis of Cham sentences. Papers in South East Asian Linguistics No. 4: Chamic Studies. Edited by David Thomas, Ernest W. Lee, and Nguyen Dang Liem. Pacific Linguistics Series A, No. 48:53-76.

Blood, Doris Walker. 1977. Clause and sentence final particles in Cham. Papers in South East Asian Linguistics No. 4: Chamic Studies. Edited by David Thomas, Ernest W. Lee, and Nguyen Dang Liem. Pacific Linguistics Series A, No. 48:39-51.

Blood, Doris Walker. 1978. Some aspects of Cham discourse structure. Anthropological Linguistics 20.3:110-132.

Bybee, Joan, Revere Perkins, and William Pagliuca. 1994. The evolution of grammar: Tense, aspect, and modality in the languages of the world. University of Chicago Press.

Clahsen, H. 1984. The acquisition of German word order: a test case for cognitive approaches to L2 development. In R. Anderson (ed.), Second Language: a crosslinguistic perspective. Rowley, Massachusetts: Newbury House. Pp. 219-242.

Dittmar, N. 1992. Introduction:grammaticalization in second language acquisition. Studies in Language Acquisition 19:195-221.

Fillmore, Charles J. 1968. The case for case. In Universals in Linguistic Theory, edited by Emmon Bach and Robert T. Harms. New York: Holt, Rinehart and Winston, Inc.

Givón, Talmy. 1979. On understanding grammar. New York: Academic Press.

Gumperz, John J. and Robert Wilson. 1971. Convergence and creolization: a case from the Indo-Aryan/Dravidian border. In Dell Hymes (ed.), Pidginization and creolization of language. Cambridge University Press, pp. 151-168.

Heine, Bernd, Ulrike Claudi, and Friederike Hünnemeyer. 1991. Grammaticalization: A conceptual framework. Chicago: The University of Chicago Press.

Lambrecht, Knud. 1994. Information structure and sentence form: Topic, focus and the mental representations of discourse referents. Cambridge Studies in Linguistics 71. Cambridge University Press.

Mühlhäusler, Peter and R. Harré. 1990. Pronouns and people: The linguistic construction of social and personal identity. Oxford: Basal Blackwell Ltd.

Pienemann, M. 1984. Psychological constraints on the teachability of lnaguages. Studies in Second Language Acquisition 6.2:186-214.

Pienemann, M. and M. Johnston. 1987. Factors influencing the development of language proficiency. In D. Nunan (ed.), Applying second language acquisition research.

National Curriculum Resource Centre, Adult Migrant Education Program, Adelaide. Pp. 45-141.

Sethuraman, Nitya, Adele E. Goldberg, and Judith C. Goodman. 1997. In Eve V. Clark (ed.), The Proceedings of the Twenty-eighth Annual Child Language Research Forum. Stanford: Center for the Study of Language and Information. Pp. 283-293.

Slobin, Dan I. 1977. Language change in childhood and in history. Language learning and thought, edited by John Macnamara. Academic Press. Pp. 185-214.

Tadmor, Uri. 1995. Language contact and systemic restructuring: The Malay of Nonthaburi, Central Thailand. Ph.D. dissertation: U. of Hawai'i.

Thomason, Sarah. 1996. Introduction. Contact languages: a wider perspective, edited by Sarah Thomason. Philadelphia: John Benjamins.

Thomason, Sarah and Terrence Kaufman. 1988. Language contact, creolization, and genetic linguistics. Berkeley: The University of California Press.

Thurgood, Graham. 1999. From Ancient Cham to Modern Dialects: Two Thousand Years of Language Contact and Change. Oceanic Linguistics Special Publication No. 28. Honolulu: University of Hawai'i Press.

Thurgood, Graham. forthcoming. A sketch of Phan Rang Cham. To appear in The Austronesian Languages o f Asia and Madagascar, edited by K. Alexander Adelaar and Nikolaus Himmelmann. Curzon Press.

vanPatten, Bill. 1996. Input Processing and Grammar Instruction in Second Language Acquisition.Norwood, NJ : Ablex.

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The examples all come from the work of David and Doris Blood gathered roughly a quarter of a century ago, with the vast majority of them coming out of Doris Blood's texts. The influence of Slobin 1977 on the paper is obvious.

Verb Movement and VP Pied-Piping in Wolof

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1. Introduction

In this paper, I will propose an analysis for "neutral" clauses in Wolof, a West Atlantic language spoken principally in Senegal and Gambia. I will provide arguments that this kind of clause is derived by either verbal head movement or VP remnant movement depending on the aspectual specification of the clause. Neutral clauses are those that do not contain any contrastively focused or Wh-constituents. Wolof clauses are SVO unless some item is focused or Wh-moved. The basic problem arises with asymmetries in the location of negation, tense, and subject agreement between imperfective and perfective clauses. Consider the sentences below.

(1)	d-oon-naa dem di-past-1sg go "I had been going"	Imperfective Affirmative di-***past-SA*** V
(2)	d-oon-u-ma dem di-past-neg-1sg go "I had not been going"	Imperfective Negative di-***past-neg-SA*** V
(3)	dem-oon-naa go-past-1sg "I had gone"	Perfective Affirmative V-***past-SA***
(4)	dem-u-ma woon go-neg-1sg past "I had not gone"	Perfective Negative V-***neg-SA past***

The relevant functional items are listed below.

Functional Morphemes

Past Tense	(w)oon
Subject Agr	naa, ma
Neg	u(l)
Aux	d(i)

In (1) and (2), imperfective clauses, we see that in both the affirmative and negative, past tense is suffixal to *di*, the imperfective auxiliary. Further, past tense precedes negation and subject agreement. In the perfective cases in (3) and (4) though, the situation is different. In the affirmative (3), past tense precedes subject agreement while in the negative past tense follows both subject agreement and negation. Thus, the past tense morpheme appears to have been stranded by the movement of some constituent. The reader should also notice that the subject agreement mutates from *naa* → *ma* from affirmative to negative. It should also be noted that the underlying form of the negative morpheme is -u(l), although in the forms here it surfaces as *-u-*. In underlying representations and derivations, I will write "ul".

The table below represents a distillation of the description so far.

(5) Ordering of Morphemes in Perfectives and Imperfectives

	IMPERFECTIVE	PERFECTIVE
AFFIRMATIVE	di-*past-SA* V	V-*past-SA*
NEGATIVE	di-*past-neg-SA* V	V-*neg-SA past*

The generalizations are that in the imperfective, the ordering of tense and SA is the same in both the affirmative and the negative: T-SA. In the perfective, on the other hand, the ordering of tense and SA varies according to whether clause is affirmative or negative. In the affirmative we get: T-SA, but in the negative we find: SA-T.

The question arises as to how we should analyze these asymmetries. Iwill be working within an Antisymmetric framework (Kayne (1994)). Thus, I assume only left-headed structures, no rightward movement, no right adjunction, and strict head movement (i.e. no long head movement).

Incidentally, it should be noted that this switching of the order of T and SA is not only found in negative clauses. I.e. it's a more general process in the language.

(6) dem-agum-nga ?
go-already-2sg
"Have you already gone?"

(3) dem-oon-naa
"I had gone"

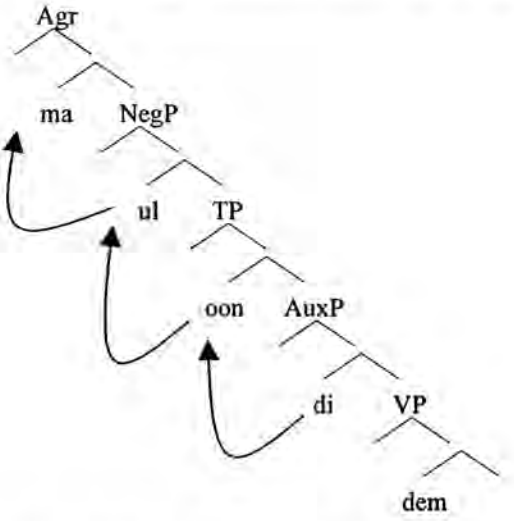
(7) dem-agum-nga woon ?
go-already-2sg past
"Had you already gone?"

The examples above show that the adverb *agum* "already", which is within the verbal complex, also induces tense stranding (7).

2. Deriving the Surface Orders in Imperfectives

Using the middle column from the table in (5), if we assume the Baker's (1988) Mirror Principle, we get a functional hierarchy for imperfectives as below.

(8)



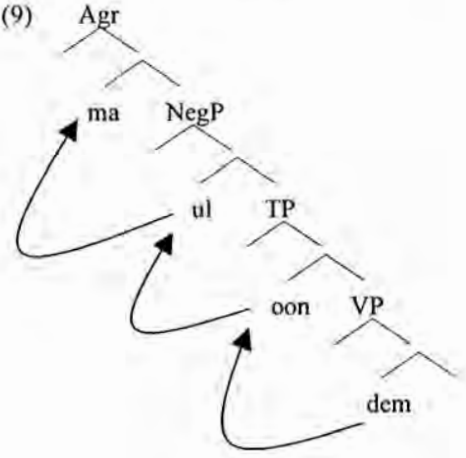
If head movement raises the auxiliary *di* up the tree, this will yield: *di-oon-u-ma dem* , which is the correct surface order. Recall that naa changes into ma in the negative. I take this to be a consequence of Neg → Agr since *ma* only appears when SA is immediately preceded by negation. For the

imperfective clauses, they can be straightforwardly derived by head movement if we assume the Mirror Principle.

3. Deriving Perfectives by Head Movement

Taking the tree in (8) and employing head movement alone to derive perfective clauses, will not work . To see why, consider the derivation below which shows a perfective verb head moving to Agr.

(9)



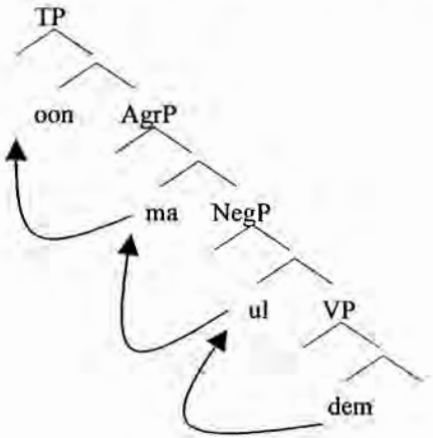
Head movement of the verb in this case yields *dem-oon-u-ma, which is ungrammatical. The simple head movement story cannot be correct. How then can we resolve this under a head movement analysis? One alternative would be to skip over a head, T^0. This would violate the Head Movement Constraint, but it has been proposed for some Slavic languages, for example. Perhaps even more importantly, the question would arise as to why V doesn't skip over T^0 in imperfectives.

The second, and perhaps more appealing alternative, would be to change the order of the functional categories in the hierarchy. For example, one could take the negative perfective to show the underlying order, as below.

(10)

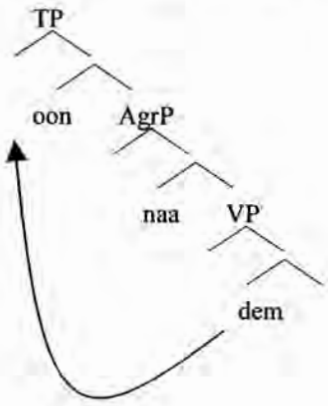
a. Negative

Target = 'dem-u-ma woon'



b. Affirmative

Target = 'dem-oon-naa'



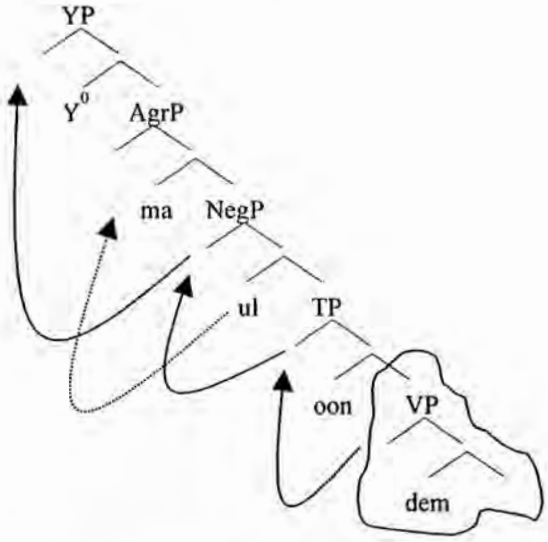
In (10a), the case of the negative above, head movement of verb up the tree gives the right order. But, at the same time, by head movement, we predict *dem-naa-woon for the affirmative in (10b). As the derivation in (10b) above shows, getting the right order requires that a head be skipped, this time, Agr. Thus, by head movement we are forced to skip heads one way or another. From these considerations I conclude that perfective clauses are not derived by head movement alone.

4. Remnant VP Movement in Perfectives

In order to account for the perfective data, let us assume that not V, but VP, undergoes movement in perfective clauses. That is, a VP remnant, created after the dependents of V move out, raises. Further, let us take the underlying order of the functional heads to be that derived by applying the Mirror Principle to the imperfectives. (i.e. the order shown back in (8), minus the AuxP). The derivation is schematized below.

(11)

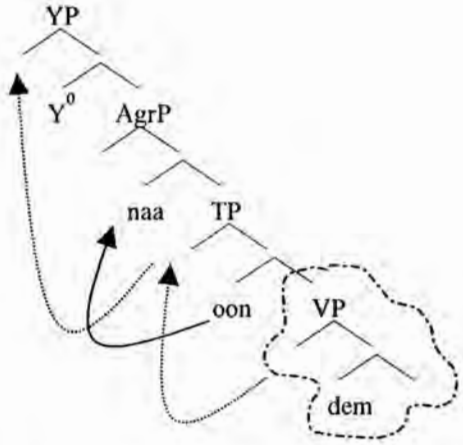
Target = dem-u-ma woon



Above, the VP remnant raises to the specifier of some XP (probably MoodP) which is higher than AgrP. In the tree it is seen that VP first raises to SpecTP, then to SpecNegP, and then finally comes to rest in SpecYP. Strictly speaking, these intermediate steps are not obviously necessary, but I assume that the verb must nonetheless check features just as *di* does in imperfective clauses. For this anlaysis, nothing turns on this point. Further, it is still necessary to posit head movement of Neg^0 to Agr^0. This yields the correct surface ordering.

In the affirmative perfective case in (3), the derivation runs the same way as that of the negative. VP raises to YP. Agr^0 attracts the next lowest head, T^0 in this case, and induces head raising of T, as in (12) below.

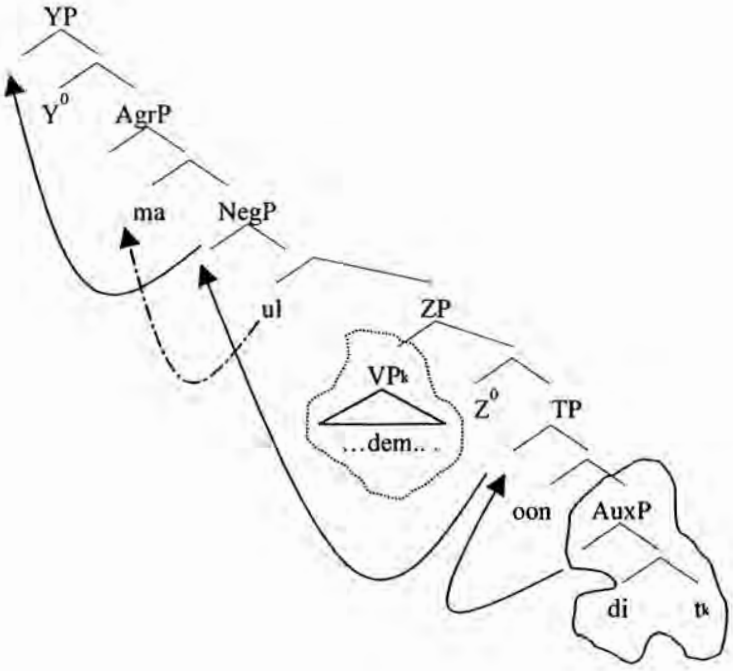
(12)



As I only assume left adjunction, this derivation yields the correct surface ordering. The generalization then is that in perfective clauses VP raises to YP and Agr attracts the next lowest head. In the case where the lower head is Neg, head movement gives the order Neg^0-Agr^0. This is what gives the impression that T^0 has been skipped over and consequently stranded. In fact, TP does not intervene between AgrP and NegP.

Next, consider the possibility that imperfectives too are derived by XP movement and not head movement. In the tree in (13), I have sketched such a derivation. I have added in "ZP" as a landing site for the main verb since any XP analysis must get the main verb out of AuxP.

(13)



As the derivation shows, if we assume an AuxP remnant, which the lexical VP has evacuated, then we predict **d-u-ma woon dem* or **duma dem-oon* (depending on how high ZP is). For the dialect here, neither of these forms is grammatical. (But note that *d-u-ma woon dem IS* grammatical in some dialects.) From this, I conclude that imperfectives are not derived via XP movement.

Given the XP/head movement asymmetry, the question arises as to why we find T $\rightarrow$ Neg in imperfectives, but not in perfectives? I take it that this follows from the mode of raising. The head movement of *di* triggers obligatory pied piping of the higher heads as it goes up the tree. The Wolof case is then analogous to the situation observed in English subject inversion contexts where *have*$\rightarrow$ Neg yields 'haven't'. Thus, we find the contrasts below.

(13) haven't the boys eaten?

(14) *have not the boys eaten?

(15) have the boys not eaten?

(16) *have the boys n't eaten?

If we take the cliticized form of Neg, *n't*, to be diagnostic of head incorporation, the generalization is that when *have* head incorporates into Neg, Neg must raise to presubject position (13) and cannot stay low (16). On the other hand, when *have* does not incorporate into Neg, Neg cannot raise to presubject position (14), but must remain in the lower post-subject position (15). Thus, just as the ability of Neg to appear in pre- or post- subject position in English depends upon the auxiliary incorporating into it, so too the ability of T^0 to raise to Neg^0 is contingent upon the auxiliary verb's incorporating into T. If this happens, then T will raise along with the auxiliary.

5. Conclusion

In this paper, evidence has been provided that in Wolof neutral clauses are derived by two kinds of movement: imperfective clauses by head movement and perfective clauses by remnant movement and head movement. It seems then that the difference really comes down to the size of the constituent that moves (Koopman & Szabolcsi (2000)). For the imperfectives, the constituent will be a head while for perfectives that constituent will be a remnant VP.

References

Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge, Massachusetts: The MIT Press.

Koopman, Hilda and Anna Szabolcsi. 2000. *Verbal Complexes*. Cambridge, Massachusetts: The MIT Press.

Travis, Lisa. 1984. *Parameters and Effects of Word Order Variation*. Ph.D dissertation, MIT.

Against TP as a Language Universal
Evidence from Halkomelem Salish[1]

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1 The Proposal

This paper argues that Halkomelem Salish (henceforth HL) has the following abbreviated clause structure:

(1) $[_{CP}\ [_{C'}\ C^0\ [_{PersP}\ pro_i\ [_{Pers'}\ \mathbf{Pers^0}\ [_{VP}\ DP_i\ V]]]]]$

The crucial properties of (1) to be argued for in this paper are that HL lacks T(ense)P (section 3) and that the subject position in the functional domain is PersonP (section 4).

If indeed HL lacks TP, then we are lead to the conclusion that clause structure is not universally determined. Rather, languages seem to differ in their inventory of functional categories. Consequently, we can view the difference in the inventory of functional projections as an important locus of cross-linguistic variation (section 5).

Before I discuss the proposal in detail, let me briefly introduce the main properties of HL.

2 Halkomelem Salish

HL is a Central Coast Salish Language. The data presented are from the Upriver dialect (Stó:lō Halq'eméylem), spoken along the Fraser River, from Yale to Chilliwack, British Columbia. There are around 10 speakers left.

Relevant syntactic properties of HL are the following. Basic word order is VSO. Full noun phrases are optional. Subject and object are marked on the main predicate or auxiliary, that is HL is a head-marking language. These properties are exemplified by the examples in (2):[2]

(2) a. may-th-óx-es te-l siyá:ye
help-trans-1o-3s det-1sg.poss friend
'He helps me.' (Galloway 1980: 126)

b. may-th-óx-es
help-trans-1o-3s
'My friend helps me.' (Galloway 1993: 425)

3 No TP in HalkomelemSalish

It is not the case that HL has no tense morphemes. There are in fact morphemes that are used to encode past and future, respectively.

(3) a. **i-lh** tsel lám tsel-**cha**
AUX-**PAST** 1SG.S go 2SG.O-1SG.S-**FUT**
'I'm gone.' (Galloway 1993:319)

b. th'í:qw'e-th-omé-
punch-TRANS-
'I will punch you' (Galloway 1993:316)

However, the existence of tense morphemes does not imply that they head their own phrase (TP) as pointed out by Enç (1996):

> "*There may be a morpheme in a language whose lexical meaning requires that a proposition be evaluated in the past or in the future, yet there may be questions about whether that morpheme is a tense.*" (Enç 1996:346)

In this section, I will argue on empirical grounds that the tense morphemes in (3) are temporal modifiers which do not head their own projection. In fact, I will argue that there is no TP in HL.

3.1 Tense on non-verbal categories

The first piece of evidence has to do with the fact that tense morphemes in HL do not have to appear on verbal categories.

First, the tense morphemes we have seen in (3) can appear on nouns (see Suttles 1987, Gerdts 1988, Galloway 1980, 1993, Burton 1997):[3]

(4) a. te-l má:l-**elh** swáqeth-**cha**
DET-1SG.POSS father-**PAST** husband-**FUT**
'my late father' (Burton 1997:67)

b. te-l
DET-1SG.POSS
'my future husband'

Secondly, tense morphemes can be attached to a morpheme (*swa*) that is best described as an emphatic possessive like English *own* as in *my own car.*

(5) a. te-l swá-**lh** kyó
DET-1SG.POSS own-**PAST** car
'my own ex-car'

b. te-l swá-**cha** kyó
DET-1SG.POSS own-**FUT** car
'my own future car'

Thirdly, adjectives can bear tense morphemes no matter whether they are used predicatively (6) or attributively (7):

(6) a. híkw-**elh** te lálém-s tl' Mali
big-**PAST** DET house-3POSS DET.OBL Mary
'Mary's house was big.'

b. híkw-**cha** te lálém-s tl' Mali
big-**FUT** DET house-3POSS DET.OBL Mary
'Mary's house is going to be big.'

(7) a. te híkw-**elh**-el swáqeth
DET big-**PAST**-1SG.POSS husband
'my husband who used to be big'

b. te híkw-**cha** swáqeth
DET big-**PAST** husband
'the husband who will be be big'

Finally, tense morphemes can also be suffixed to prepositions:

(8) a. stetís-**elh** te stó:lo®
near-**PAST** DET river
'was near the river'

b. stetís-**cha** te stó:lo®
near-**FUT** DET river
'will be near the river'

From the examples in (4)-(8) we can conclude that tense morphemes do not *necessarily* attach to a verbal projection. Rather, they can attach to any category. This means however, that tense morphemes do not *have* to occupy T. Given minimalist assumptions, if tense morphemes don't have to occupy T, we can conclude that they never occupy T.

This is of course a consequence of the current proposal, namely that there is no TP.[4]

3.2 Tense on verbal categories does not have a fixed position

A second and related argument has to do with the fact that in the clauseal domain, the tense morpheme does not have a fixed position. Consider the distribution of the past tense morpheme. First, it can appear attached to an auxiliary:

(9) lí-**lh** chexw q'óq'ey
AUX-**PAST** 2SG.S sick
'You were sick.' (Galloway 1993:319f.)

Secondly, in negative sentences it can be attached to the negative marker *ewe*:

(10) a. éwe-**lh**-tsel kw'à:y xwlalá:m
NEG-**PAST**-1SG.S hungry listen
'I'm never hungry'
(Galloway 1993:321)

b. éwe-**lh**-tsel
NEG-**PAST**-1SG.S
'I never listen'

Thirdly, in the context of negation the past tense morpheme can also attach to the subject clitic.

(11) éwe-tsel-**lh** qwéls-th-òmè
NEG-1SG.S-**PAST** speak-TRANS-2SG.O
'I never speak to you.' (Galloway 1993:321)

And finally, i n the context of negation the past tense marker can also attach to the auxiliary:

(12) éwe-tsel i-l-**elh** t'it'elem
NEG-1SG.S AUX-1SG.SS-**PAST** sing.REDUP
'I didn't sing'

Note that the examples in (10) - (12) crucially exclude an analysis whereby the past tense marker is interpreted as a 2nd position clitic. Rather we have to conclude that the past tense marker is not associated with a fixed position. One would expect it to appear in a fixed position if it was associated with a particular syntactic head. Therefore, we can conclude that the past tense morpheme does not *have to* occupy the

syntactic head T. Again, by minimalist assumptions we can conclude that the past tense morpheme never occupies T because there is no TP.

3.3 Past and future do not have the same distribution

Another piece of evidence against analysing the tense morpheme as heading a syntactic head T has to do with the fact that the future morpheme has a different distribution than the past tense morpheme. Usually, the future morpheme appears in the position following the last inflectional element of the complex verb:

(13) a. th'í:qw'e-th-omé-tsel-**cha**
punch-TRANS-2SG.O-1SG.S-**FUT**
'I will punch you' (Galloway 1993:316f)

b. ímex-tsel-**cha**
walk-1SG.S-**FUT**
'I will walk.'

However, the future morpheme can also appear preceding the main predicate.

(14) a. tsel-**cha** ímex xwlalá:m-el
1SG.S-**FUT** walk listen-1SG.S
'I will walk.'

b. éwe-tsel-**cha**
NEG-1SG.S-**FUT**
'I will not listen.'

What this section shows is that future and past morphemes do not share the same distribution. This means however that at least one of the tense morphemes does not occupy the syntactic head T. Again by minimalist assumptions, we can conclude that the tense morphemes never occupy T because there is no TP.

3.4 Past and future are not in complementary distribution

If past and future tense morphemes are in fact not associated with a particular head in the clause we expect that they can appear within the same clause. This is in fact a correct prediction:

(15) **i-lh-tsel-cha** ímex.
AUX-**PAST**-1SG.S-**FUT** walk
'I will be walking/I was going to walk.'

(15) shows that past and future tense morphemes are not in complementary distribution. This clearly indicates that at least one of the tense morphemes is not generated in T. Again, by minimalist assumptions we can conclude that the tense morphemes never occupy T because there is no TP.

3.5 There are no modal auxiliaries

It is standarly assumed that modal auxiliaries are base-generated in the syntactic head T (see for example Enç 1996).

With this in mind the current proposal makes a straightforward prediction for HL. If there is no TP, there should not be any modal auxiliaries. This prediction is indeed borne out. A modal auxiliary in HL is not attested. Modality is encoded by main predicates (i.e. lexical categories) rather than (functional) auxiliary verbs.

(16) a. skw'áy kw'-el-s kw'éts-l-exw
impossible DET-1SG.POSS-NOM see-TRANS-3O
'I can't see it.' (lit: 'It's impossible that I see it.')
b. léw iyólem kw'-el-s kw'éts-l-exw
AUX all-right DET-1SG.POSS-NOM see-TRANS-3O
'I can see it.' (lit: 'It's allright that I see it.') (Galloway 1993:181)

To conclude, the lack of modal auxiliaries in HL is of course expected under the assumption that there is no TP.

3.6 Sequence of tense

In this subsection, I will show that in HL, the temporal interpretation of an embedded tense is reminiscent of the temporal interpretation of temporal modifiers rather than tense morphemes in English.

Consider first sequence of tense effects in English. The sentence in (17) is associated with two readings given in i) and ii) below:

(17) Mary said that she was tired. (Enç 1996:350 ex. 18)
i) SHIFTED READING:
(17) is true if at some past time Mary said that she was tired at a *prior* time
(e.g. *Mary said yesterday that she was sick the day before yesterday.*)
ii) SIMULTANOUS READING:

(17) is true if the time of being tired is the same as the time of saying.
(e.g. *Yesterday Mary said: "I am sick."*)

In HL, the situation is different:

(18) **i-lh** xét'e te Mali cheláqelhelh kw'-s-es
i-lh xlhém
AUX-PAST say DET Mary yesterday DET-NOM-3S
AUX-PAST tired
'Mary said yesterday that she was tired.'

The sentence in (18) can only receive the simultaneous reading, that is both instances of the past tense marker are evaluated with respect to the utterance time. A shifted reading, wherebey the embedded past is evaluated with respect to the matrix past is not an option. In this respect, the HL tense morphemes behave like temporal modifiers which is of course expected by our analysis. Crucially, English temporal modifiers like *yesterday* only allow the simultanous reading:

(19) Yesterday Mary said that she was sick yesterday.

In (19), the second instance of *yesterday* can only be evaluated with respect to the utterance time but not with respect ot the matrix *yesterday*. Thus, the sentence cannot be interpreted as *Yesteday Mary said that she was sick the day before yesterday.*

The pattern discussed in this subsection shows that HL tense morphemes act like temporal modifiers. This is of course expected if HL tense morphemes do not instantiate the syntactic head T.

3.7 Optionality of tense marking

If tense morphemes are (morphological) modifiers, we predict that tense marking is optional just like the use of temporal modifiers in English is optional. In this subsection, I will show that this prediction is indeed borne out.

In HL, sentences without overt tense marking can receive a present, past or future interpretation:

(20) tsel í:mex
1SG.S walking
'I am/was/will be walking.'

"Present tense is the catch-all tense, used to indicate present action (which must be counting as the speaker speaks – continuative aspect), habitual action (which may be spread over past, present and future), momentanous action (which the speaker is about to perform—noncontinuative aspect), and past action (historical present in narratives, legends, etc.). Present tense is unmarked. (Galloway 1993:315)

It is thus clear that tense marking in HL, as opposed to English, is optional. Of course this follows from the assumption that there is no TP in HL.

3.7.1 A potential problem

The above conclusion has to face a potential problem. Déchaine (1993) argues that TPs are universally present. She argues that in languages without overt tense marking, there must be an empty syntactic head T. The evidence she discusses has to do with the fact that the interpretation of "zero tense" interacts with the eventive/stative interpretation of verbs. For example in Haitian, a bare eventive predicate can be interpreted as present or past (just like in the HL sentence in (20)):

(21) a. Pyè vann bèf
Pyé sell cattle
'Pyè sells cattle.'

b. Pyè vann bèf yo
Pyé seel cattle DET
'Pyè sold the cattle.'

(Déchaine 1993:433 ex. 218)

However, a bare stative predicate is consistently interpreted as non-past:

(22) a. Sisi renmen chat mwen.
Sisi like cat
'Sisi likes cats.'

b. Sisi renmen chat
Sisi like cat Is
'Sisi likes my cat.'

(Déchaine 1993:433 ex. 219)

From this, Déchaine concludes that T must be occupied by a Ø tense morpheme. Crucially, HL and St'át'imcets (a Northern Interior Salish language) show the same pattern as Haitian. In the absence of adverbials or aspectual marking, stative sentences are unambiguously interpreted as present:

(23) HL:

a. schewót-tsel

b. tsel- kw'ókw'iy

smart-1SG.S
'I'm smart.'
'*I was smart.'

1SG.S-hungry
'I'm hungry.'
'*I was hungry.'

(24) St'át'imcets:

a. sécsec ti sqáycw-a
sqáycw-a
silly DET man-DET DET
'The man is a fool.'
'*The man was a fool.'

b. táyt ti
hungry DET man-DET
'The man is hungry.'
*The man was hungry.'

(Demirdache 1997:131(4))

3.7.2 Present proposal

Even though I do not have an explanation for these facts, I argue that they do not necessarily lead to the conclusion that there is an empty T head. The argument has to do with the fact that the present interpretation of stative predicates is a **default** rather than an obligatory interpretation. Thus, in the presence of a temporal modifier a past tense interpretation is possible without the past tense marker:

(25) a. schewót-tsel cheláqelhelh
cheláqelhelh
smart-1SG.S yesterday
yesterday
'I was smart yesterday.'

b. tsel- kw'ókw'iy
1SG.S-hungry
'I was hungry yesterday.'

This means that one cannot simply say that the syntactic head T is occupied by a ∅ T morpheme which is associated with a present interpretation. Rather, an analysis along the lines of Déchaine (1993) involving a ∅ T morpheme has to answer the question as to why there is a default present intepretation associated with ∅ in case of stative predicates?

For our proposal the question is simply why there is a default temporal interpretation. The crucial point is that an analysis does not have to rely on an empty T and consequently, the pattern in (21) - (24) does not cause a problem for the present proposal.[5]

3.8 The temporal independence of DPs

A final piece of evidence against a TP in HL has to do with another interpretational difference between English and Salish DPs.

Salish determiners often encode a degree of remoteness. Very roughly, we can distinguish between present and absent determiners (see for example Davis & Saunders 1975). Demirdache (1997) observes that an absent determiner in St'át'imcets can shift the predication time of the NP into the past. Crucially if the denotation of the NP is located in the past, then the predication time of the main predicate is also in the past:

(26) sécsec [ni kel7áqsten-s-a ti US-a]
strong DET.ABSENT chief-3SG.POSS-DET DET US-DET
a. The (present, not visible) president of the US is a fool.
b. The (past, not visible) president was a fool.
c. *The (past, not visible) president is a fool. (Demirdache 1997:133 ex.10)

On basis of examples like (26) Demirdache concludes that the temporal intepretation of the matrix predicate is dependent on the temporal interpretation of the NP (as opposed to English). Similar facts also hold in HL (Strang Burton, p.c.).

In the present context, this is an important fact. The St'át'imcets pattern is expected if there is nothing in the clause that would already *fix* the temporal interpretation. In other words, this dependency is expected if there is no *tense* in the clause (whereas in English there is).

3.9 Conclusion

In this section we have seen evidence that tense marking in HL differs crucially from from tense marking in English: tense morphemes have different distributional and interpretational properties. We have seen that the properties of HL tense morphemes can be straightforwaredly accounted for with the assumption that there is no TP in HL. Thus the cross-linguistic difference between English and HL reduces to the presence vs. absence of TP .

4 Person Phrase in Halkomelem

This section briefly provides empirical evidence for the second part of the proposal, namely that the functional subject projection in HL is Pers(on)P.

4.1 The locus of subject agreement in Halkomelem

In the previous section I have argued that there is no TP in HL. The question that arises then, is whether there is a functional position associated with subjects in HL at all. The examples below suggest that the answer to this question is positive because in HL we find subject agreement, which is an indication that there is a subject-related functional position. HK has subject clitics (27) and in certain environments subjunctive subject agreement (28):

(27)	lám-**tsel**	lám-**chexw**	lám
	go-1sg.s	go-2sg.s	go
	'I go'	'You go.'	'He goes.' (Gallwoay 1993: 176)
(28)	we-lam-**el**	we-lam-**exw**	we-lam-**es**
	if-go-1sg.s	if-go-2sg.s	if-go-3s
	'If I go.'	'If you go.'	'If he goes.' (Galloway 1993: 184)

Given this pattern we have to conclude that there is a subject-related functional projection (other than TP). The question then is, where is subject agreement located? In the remainder of this section I will argue that the locus of subject agreement is PersP, which is a *nominal* functional position (See Manzini & Savoia (1998) for Italian; Déchaine 1999 for Algonquian; etc.).

4.2 Possessive agreement in subordinate clauses

Evidence for the assumption that the locus of subject agreement is PersP comes from a comparison with HL possessive agreement, which is located in PersP (Wiltschko 1998, Davis & Wiltschko 1999). The HL possessive paradigm is given below:

(29)	a.	te-l	má:l	te má:l-tset
		det.1sg.poss	father	det father-1pl.poss
		'my father'		'our father'
	b.	te-'	má:l	te-' má:l-elep
		det-2sg.poss	father	det-2poss father-2pl.poss
		'your father'		'your$_{pl}$ father'
	c.	te	má:l-s	ye má:l-s
		det	father-3poss	det.pl father-3poss
		'his father'		'their father'

Crucially, possessive agreement in HL is not restricted to DPs. It is also used as subject agreement in subordinate clauses:

(30) a. skw'áy kw'-**el**-s kw'ets-l-exw
impossible det-1sg.poss-nom see-trans-3o
'It's impossible that I see it.' (= I can't see it.)

b. skw'áy kw'-**a**-s kw'ets-l-exw
impossible det-2poss-nom see-trans-3o
'It's impossible that you see it.' (= You can't see it.)

c. skw'áy kw'-s kw'ets-l-exw-**s**
impossible det-nom see-trans-3o-3poss
'It's impossible that he/she/they see it.' (He/she/it/they can't see it.)

d. skw'áy kw'-s kw'ets-l-exw-**tset**
impossible det-nom see-trans-3o-1pl.poss
'It's impossible that we see it.' (= We can't see it.)

e. skw'áy kw'-a-s kw'ets-l-exw-**elep**
impossible det-2poss-nom see-trans-3o-2pl.poss
'It's impossible that you see it.' (= You can't see it.) (Galloway 1993: 181)

Since possessive agreement within the DP is of the same form as possessive agreement in subordinate clauses we can conclude that subordinate clauses contain PersP. Consequently, PersP is the locus of "subject agreement" in subordinate clauses.

4.3 PersP across clauses

In the previous subsection we have seen that PersP is the locus of subject agreement in subordinate clauses. I would like to sugges that PersP is in fact the locus of subject agreement across all clauses. This conclusion is empirically supported in the following way.

First, there is a transparent morphological relation between possessive agreement on the one hand and subject clitcs and subjunctive agreement on the other hand. This is obvious from the following table:

(31) Subject agreement and possessive agreement (from Galloway 1993):

	matrix subject clitics	Subjunctive subject suffixes	possessive endings	
1sg	**tsel**	**-(e)l**	**-(e)l**	
2sg	chexw	-xw	-^{s}	

3sg/pl	∅	-s		-s
1pl	tset	-t		-ts et
2pl	chap	-p/-elep	-(a)'	-el e p

Such a transparent morphological relation is in fact expected if subject agreement in general is associated with PersP.

Secondly, HL lacks verbal paradigms which would be associated with a *verbal* functional projection (TP). That is, there are no infinitivals or participles (see Kroeber 1991):

> "*No Salish languages possess inflectional categories comparable to the infinitives or gerunds of some European languages, which mark clauses from which subjects are obligatorily absent.*" (Kroeber 1991: 36f.)

The absence of a verbal paradigm is consistent with the assumption that the functional subject position in HL is *nominal* (i.e. PersP).

5 Conclusion and Consequences

In this paper, I have argued that the functional projection associated with subject agreement is PersP and crucially that HL lacks TP.

An important consequence of this claim for the theory of grammar is that TP cannot be treated as a language universal and consequently, that clausal architecture cannot be universally determined. Rather I would like to suggest on basis of the HL pattern that language variation can be viewed as a function of selecting among different functional projections made available by UG (see also van Gelderen 1993; Bobaljik 1995; Thrainsson 1996).

Notes

[1] I would like to thank my Halkomelem consultants Rosaleen George and Elizabeth Herrling for sharing their knowledge of the Halkomelem language. Original data belongs to the Stó:lo Nation Language Program. I have benefited from comments by Strang Burton, Henry Davis, Rose-Marie Déchaine, Dale Kinkade, Lisa Matthewson, the Squamish research group: Leora Bar-el, Carrie Gillon, Peter Jacobs and Linda Watt, and the audience at WECOL 2000 and the UBC Research Seminar. All remaining errors are

my own. Research on this paper was funded by the Academy of Science Austria (APART 435).

[2] Abbreviations used are as follows: AUX = auxiliary; DET = determiner; FEM = feminine; FUT = future tense; INDEP = independent pronoun; INTRANS = intransitivizer; MASC = masculine; NEUT = neuter; NOM = nominalizer; O = object; OBL = oblique; PASS = passive object agreement; PAST = past tense; PL = plural; POSS = possessive; PROG = progressive; REDUP = reduplicated; S = subject; SG = singular; SS = subjunctive subject; TRANS = transitivizer. A short key to the orthography of Upriver Halkomelem (see Galloway 1993) is: a = œ or ″; ch = tS, ch' = t'S, e (between palatals) = I, e (between labials) = Á, e (elsewhere) = E, lh = Ò, o = a, o® = o, xw = x^{w}, x̲ =x 4, y = j, sh = S, th = θ, th' = tθ', tl' = tÒ', ts = c, ts' = c', x = x or x^{j}, x̲w = x1^{w}, ' = /, ⇔ = high stress, ∃ = mid stress.

[3] Note that this phenomenon is not restricted to nouns in predicate position. Observe that in the examples in (4) and (5) the noun is preceded by a determiner, which indicates that the nominal phrase here is not a predicate.

[4] Note that this is not a necessary conclusion. One might argue that there is a TP associated with every category in Halkomelem. However, the assumption that there is no TP can account for all the properties of tense morphemes in Halkomelem discussed in this section, whereas the generalized TP-account cannot. The no-TP account is thus a simple and learnable hypothesis to account for the cross-linguistic differences between English and Halkomelem.

[5] Note that this point generalizes to the temporal interpretation of clauses in general. Under the present proposal we are led to the conclusion that the temporal interpretation of a clause is not necessarily associated with a syntactic head T. As far as I can see, this does not posit a problem, since we know independently that semantic operators are not necessarily associated with a particular syntactic head; existential closure being just one example.

References

Bobaljik, Jonathan. 1995. *Morphosyntax: the Syntax of Verbal Inflection.* Doctoral dissertation, MIT, Cambridge, Mass.

Burton. Strang. 1997. 'Past Tense on Nouns as Death, Destruction and Loss', K.Kusomoto (ed.) *Proceedings of the 27th North Eastern Linguistic Society:* 65-77.

Davis, Henry, and Martina Wiltschko. 1999. 'Inflection is syntactic. Evidence from Salish Possessives', *WCCFL* 18, University of Arizona, Tucson (Arizona).

Davis, Philip, and Ross Saunders. 1975. 'Bella Coola Nominal Deixis', Paper presented at the *Ninth International Conference on Salish and Neighboring Languages.*

Déchaine, Rose-Marie. 1993. *Predicates Across Categories.* Doctoral dissertation, University of Massachusetts, Amherst. (GLSA)

Déchaine, Rose-Marie. 1999. 'What Algonquian morphology is really like: Hockett Revisited', L.Bar-el, R.-M. Déchaine, and C. Reinholtz (eds.) *Papers from the workshop on structure and constituency in native American languages* (MIT occasional papers in linguistics **17**: 25-72.

Demirdache, Hamida. 1996. 'The chief of the United States sentences in St'át'imcets (Lillooet Salish)', *Papers for the 31st International Conference on Salish and Neighboring Languages* UBC, Vancouver.

Demirdache, Hamida. 1997. 'A cross-linguistic asymmetry in the temporal interpretation of DPs', A. Green and V. Motapanyane (eds.) *Proceedings of ESCOL '96*. Ithaca, NY: Cornell Linguistics Circle.

Demirdache, Hamida. 1998. 'On the Temporal Location of Predication Times: The role of Determinres in Lillooet Salish', E.Curtis, J.Lyle, & G.Webster (eds.) *Proceedings of WCCFL 1997* U.Washington CSLI Publications: 129-144.

Enç, Myrvet. 1996. 'Tense and Modality', Sh. Lappin (ed.) *The Handbook of Contemporary Semantic Theory.* Blackwell, Oxford: 345-358.

Galloway, Brent. 1980. 'The Structure of Upriver Halq'eméylem, a Grammatical Sketch', *Tó:lméls Ye Siyelyelólexwa, Wisdom of the Elders.* published by the Coqualeetza Education Training Center, Box 370, Sardis, BC

Galloway, Brent. 1993. *A Grammar of Upriver Halkomelem.* University of California Press.

Gerdts, Donna. 1988. *Object and Absolutive in Halkomelem Salish.* New York & London: Garland Publishers.

Kroeber, Paul. 1991. *Comparative syntax of subordination in Salish,* Doctoral dissertation, University of Chicago.

Manzini, R. & L. Savoia 1998 'Clitics and Auxiliary Choice in Italian Dialects: Their Relevance for the Person Ergativity Split', *Recherches linguisitques de Vincennes 27*: 115-138.

Suttles, Wayne. 1987. 'Linguistic Means for Anthropological Ends of the Northwest Coast.' *Coast Salish Essays.* Talon Books, Vancouver: 248-255.

Thráinsson, Höskuldur. 1996. 'On the (Non-)Universality of Functional Categories', W. Abraham, S.D. Epstein, H. Thráinsson, and J.-W. Zwart (eds.) *Minimal Ideas: Syntactic Studies in the Minimalist Framework.* Amsterdam: John Benjamins: 253-81.

van Gelderen, Elly. 1993. *The Rise of Functional Categories.* Amsterdam/Philadelphia: John Benjamins.

Wiltschko, Martina. 1998. 'Halq'eméylem possessives', *Papers for the 33rd International Conference on Salish and Neighboring Languages.* Seattle, Washington: 448-473.

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Functional Categories and Structural Economy in Bantu*

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Introduction

Current predominant theories of clausal syntax such as the Principles & Parameters approach are characterized by a strong tendency to represent each morphological category as an independent syntactic head. This highly articulated configurational design of phrase structure is uniform across languages, and thus requires postulation of multiple empty functional heads (and specifiers) for some languages in which not all the functional projections are instantiated by overt morphemes. In this paper, I argue for a non-derivational, output-based approach to clausal syntax by providing an OT analysis of verb raising in Bantu object relativization.

1 Relativization and Verb Raising

It has long been known that object relativization in some Bantu languages (canonically SVO) exhibits so-called 'stylistic inversion', where the subject appears postverbally, rendering VS order (e.g. Bokamba 1971 1976, Givón 1972, Kinyalolo 1991, Demuth 1995). This section presents the core facts. I hope to show that the presence of 'stylistic inversion', here analyzed as verb raising, is a natural, expected property once we recognize a wider spectrum of variation in relativization across languages, and the facts follow straightforwardly from a wider typology of relative clauses.

In Bantu languages, relativization can be formed in one of three ways. It can be formed using a morphologically independent relativizer, whose function is similar to a relative pronoun in English. Sesotho falls into this type, as exemplified in (1) (Harford and Demuth 1999). The relativizer *tseo* is analyzed as the head of CP.

(1) di-kobo **tseo** ba-sadi ba-di-rekileng kajeno. Sesotho
10-blankets 10REL 2-women SM2-OM10-bought today
'the blankets which the women bought today'

Other Bantu languages such as Kirundi and Kinyarwanda use a grammatical tone on the verb to indicate that the verb is in a relative clause (Kimenyi 1980, Sabimana 1986), as shown in (2) from Kinyarwanda (Kimenyi 1980:67). In the relative clause *the men who returned* in (2b), there is a high tone on the verb stem *-gáruts-*. Contrast that with the verb stem without the high tone in the non-relative clause in (2a).

(2) a. Abagabo b-a-garuts-e.
men 2-PAST-return-ASP
'The men returned.'

b. N-dá-bon-a abagabo b-a-gáruts-e.
I-AF-see-ASP abagabo 2PAST-REL.return-ASP
'I see the men who returned.'

The third type, observed in Dzamba and Chishona, has a bound relativizer attached to the verb in the relative clause. An example of subject relativization is given in (3) (Bokamba 1976).

(3) omoto ó-kpa-áki imundɔndɔ a-kim-í. Dzamba
the.1person 1REL-take-PAST the.jug 1-feel-IP
'The person/man who took the jug just fled.'

Among these Bantu languages, only this third type exhibits "stylistic inversion" in object relativization, illustrated in (4) (Dzamba; Givón 1972:190). Example (4a) is a simple transitive sentence, and (4b) is object relativization, and the canonically preverbal subject is placed postverbally. Without inversion, the example is ungrammatical (4c).

(4) a. Zaki a-bundaki imo-kondo. Dzamba
Jack 1-caught the-alligator
'Jack caught the alligator.'

b. oPetelo a-nyamozi imo-dondo i-mu-bundaki Zaki
Peter 1-sold the-alligator REL-it-caught Jack
'Peter sold the alligator that Jack caught.'

c. *oPetelo a-nyamozi imo-dondo Zaki i-mu-bundakiz
Peter 1-sold the-alligator Jack REL-it-caught

Sesotho, the first type with a free-standing relativizer, is among the languages which do not show subject inversion, as illustrated earlier in (1). Contrast it with the ungrammatical example in (5) in which the subject appears postverbally.

(5) *di-kobo tseo ba-di-rekileng basadi kajeno
10-blankets 10REL SM2-OM10-bought 2women today Sesotho

A key observation in early work is that the prosodic status of the relative marker correlates with the presence/absence of subject inversion: languages with a prosodically bound relative marker permit (or more accurately, require) inversion as in Dzamba, while those with a free-standing relative pronoun do not, as in Sesotho. The data in (6) from Kinyarwanda additionally show that languages that employ a grammatical tone to indicate relativization (e.g. Kirundi and Kinyarwanda) do not show subject inversion (Kimenyi 1980, Sabimana 1986; also Morimoto 2000b, chapter 4).

(6) a. Umugabo y-a-haa-ye umugóre igitabo. Kinyarwanda
1man 1-PAST-give-PERF 1woman book
'The man gave a book to the women.'

b. N-a-boon-ye igitabo umuhuûngu y-a-haá-ye
I-PAST-see-ASP book boy 1SM-PAST-REL.give-ASP
umukoômwa.
girl
'I saw the book that the boy gave to the girl.'

The category of the relativizer and the presence/absence of inversion across the Bantu languages are summarized in (7). In languages such as Dzamba and Chishona, referred to as Type I, the relativizer is a bound form, and inversion is in fact obligatory, not stylistic. Sesotho and Setswana, referred to as Type II languages, have a free-standing relativizer, and no inversion occurs. Kirundi and Kinyarwanda, Type III languages, make use of a grammatical tone on the verb inside relative clause, and the subject remains in canonical subject position (preverbal).

(7) The form of the relativizer and 'stylistic inversion'

	Languages	REL Form	Inversion
Type I:	Dzamba	N-head REL-verb NP_{Su}	Yes
Type II:	Sesotho	N-head REL NP_{Su} verb	No
Type III:	Kirundi	N-head NP_{Su} REL.verb (tone)	No

In recent work, Harford and Demuth (1999) (also Demuth and Harford 1999; hereafter H&D and D&H respectively) analyze subject inversion in object relatives as prosodically-driven V-to-I and I-to-C movement. The proposed structure is shown in (8).

(8) Dzamba-type languages with inversion (Harford & Demuth 1999)

[$_{NP}$ the-alligator$_j$ [$_{CP}$ [$_{C'}$ REL-caught$_i$ [$_{IP}$ t_j [$_{I'}$ t_i [$_{VP}$ Jack [$_{V'}$ t_i t_j]]]]]]]

The V-to-I and I-to-C movement is indicated by the chain of traces indexed t_i; see also Kinyalolo (1991) for a similar verb movement analysis. Harford and Demuth argue that in Dzamba-type languages with a bound relativizer, the prosodically weak C "attracts" the V in I, leading to a case where phonology supposedly drives syntactic head movement, contra Pullum & Zwicky (1988) that "syntax feeds phonology" but not vice versa (also Golston 1995 for an OT implementation of this standard assumption). In this type of language, the VP internal subject is assumed to remain in that position; the head noun of the relative clause moves from the original object position to the head of the top NP, leaving the trace indexed t_j. In languages without inversion, the morphologically independent relative pronoun occupies C, and V, having moved to I, stays in I, as shown in (9). The VP internal subject moves to SpecIP, and the relativized noun heads the top NP (leaving the trace indexed t_j).

(9) Sesotho-type languages without inversion (Harford & Demuth 1999)

[$_{NP}$ blankets$_j$ [$_{CP}$ [$_{C'}$ REL [$_{IP}$ women$_k$ [$_{I'}$ bought [$_{VP}$ t_k [$_{V'}$ t_i t_j]]]]]]]

One advantage of D&H and H&D's analysis of object relativization in Bantu languages is that it provides a unified explanation of apparently unrelated phenomena, such as verb raising and stylistic inversion (so-called postverbal subjects) observed in Germanic V2 and Romance languages. Despite this advantage, the above analysis faces at least three fundamental problems. First, it is unclear why the prosodically deficient relativizer in C in Type I languages would need a verb as its prosodic host. Sadler (1998) and Nordlinger and Sadler (2000), for example, observe that fully reduced (non-syllabic) English auxiliaries form a morphological unit with the element to their left, the subject, rather to the main verb, as shown by the brackets in (10). The bracketing in (10a) shows the (syntactic) phrasing with the unreduced auxiliary *have*, and the bracketing in (10b) shows the phrasing with the fully reduced auxliary *'ve*.

(10) a. $[_{IP}\ [_{DP}$ They$]\ [_{I'}$ have done $[_{NP}$ their homework$]]]$.

b. (They've)$_{\omega}$ done their homework.

Based on data like that in (10) in English and other languages (e.g. Kayardild, Supyire (Niger-Congo), Gui (Khoisan), Chamicuro (Arawak), Pitta Pitta (Pama-Nyungan)), Nordlinger and Sadler argue that nominal elements can be responsible for clause-level information such as tense and aspect that is normally assoicated with the verbal category. If the Bantu bound relative pronoun in C position in Dzamba-type languages was a clitic, then it is not obvious why it would not simply cliticize onto the next available category, the subject, either to form a morphological unit with the subject like English and the other languages mentioned above, or a phonological phrase with it (though syntactically it may be still part of the verbal projection). If the prosodically weak C requires strict adjacency with the verb past the subject that appears between the relativizer in C and V, this suggests a morphological, rather than prosodic, dependency between these elements.

Secondly, D&H and H&D's analysis requires postulation of two structural positions for subject in these Bantu languages: VP internal position for Dzamba-type languages, and SpecIP for Sesotho-type languages. However, they present no independent evidence for the structural difference in subject position.

Thirdly, there is no evidence in Dzamba or other closely related Bantu languages (e.g. Kirundi, Kinyarwanda) for lexical INFL. For example, in Kinyarwanda, tense and aspect are marked on the verb as a prefix and suffix respectively. Modal verbs that are expressed as auxiliaries in English, such as *-kwii-* 'must' and *shobok* behave like any other main verb: it can be negated like any other verb by a negative prefix; it inflects for tense, aspect, and gender agreement. In fact, these modal verbs are analyzed by Kimenyi (1980) as raising predicates which correspond to the English equivalent of 'be necessary' and 'be possible' in the non-raised construction. Similarly for Chichewa, Bresnan and Mchombo (1987) concludes that Chichewa lacks the category INFL. On the derivational analysis, then, I is only needed for theory-internal reason, namely to allow V to move through to C, and I is never filled.

Incidentally, the proposal that V-to-I and I-to-C syntactic verb movement in Bantu object relativization is driven by a set of prosodic constraints—hence "phonology outranks syntax"—is the exact opposite of a proposal on prosodically-conditioned V2 in Northern Norwegian (Rice and Svenonius 1997): syntactic constraints must dominate phonological constraints, and

only what is left unresolved by the syntax is resolved by the phonology. It is unclear why these similar sets of data should deserve such mutually incompatible treatments.

In what follows, I explore an alternative analysis of object relativization in these Bantu languages which effectively nullify D&H and H&D's argument that phonology outranks syntax. In the next section, I motivate the basic clause structure and relative clauses in Bantu languages within the non-derivational framework of Lexical-Functional Grammar (LFG; Bresnan 1982, 2001, Dalrymple et al. 1995).

2 Bantu Clause Structure

The fundamental assumption underlying proposals about clause structure in LFG is the Lexical Integrity Principle (cf. Bresnan and Mchombo 1995): the internal structure of words is organized by a set of principles different than those that underlie the organization of phrasal structure. Word internal elements are opaque to any syntactic operations. Lexical items are inserted into syntactic structure fully inflected, and are morphologically independent leaves of phrase structure trees.[1] LFG posits two levels of structure relevant in the present discussion, c(onstituent) structure and f(unctional) structure, which are mutually constrained by correspondence principles. While c-structure represents the surface expressions of phrasal constituents and may vary across languages, f-structure encodes grammatical information and predicate-argument relations, and is largely invariant across languages. In addition, LFG recognizes two types of clausal organization, the endocentric and exocentric type: the former is represented by a familiar X-bar schema where each XP is uniquely headed (e.g. VP, NP, IP). Exocentric clausal organization posits the node S which is not headed in c-structure, and can dominate any XP (or X).

2.1 Elements of the basic clause structure

With respect to Bantu clause structure, I make the following assumptions about constituency in Bantu languages: first, Bantu languages exhibit configurational structure with a VP. Evidence comes from word order facts (Bresnan and Mchombo 1986, 1987) and phonological phrasing (Bresnan and Kanerva 1989) in Chichewa. Although data from phrasal phonology are not available outside Chichewa, the same word order facts hold in other Kirundi, Kinyarwanda (Sabimana 1986), and Sesotho/Setswana (Demuth and Mmusi 1997). Second, Bantu languages generally lack theory-independent evidence for lexical (morphologically independent) INFL. For

this reason, the exocentric category S, which is made available in LFG, has been proposed to be the root node in Bantu languages (cf. Bresnan and Mchombo 1986, 1987 for Chichewa; Mugane 1996 for Kikuyu and Swahili; Morimoto 2000 for Kirundi, Kinyarwanda). Third, above S, there is a functional projection CP. The existence of C is confirmed by complementizers. In Kirundi and Kinyarwanda, a left-dislocated topic can occupy SpecCP. For example, when an NP is dislocated out of an embedded clause, the dislocated topic can appear before the complementizer, as shown in (11) from Kinyarwanda (Morimoto 2000, chapter 4).

(11) Umwaalimu a-ra-shaak-a **Sam, abaana,** ko a-ba-ha
teacher s/he-FOC-want-ASP Sam, children, that he-them-give
igitabo.
books
'The teacher wants that Sam, (to) the children, he gives them the books.'

Krw

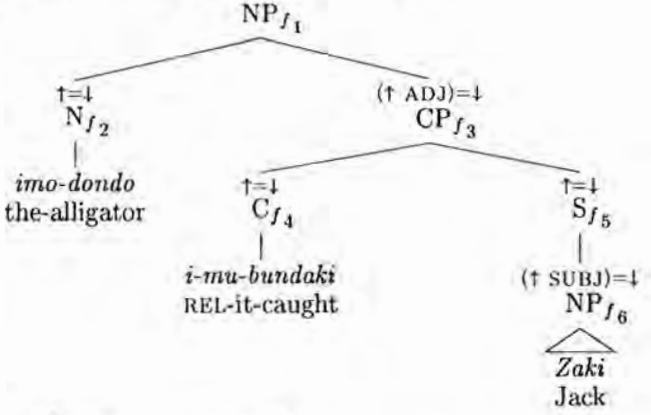
Furthermore, due to the absence of evidence to the contrary, I assume that the bound relativizer in Dzamba-type languages is morphologically bound to V rather than being a clitic and heading its own functional projection.

2.2 Relativization

The basic clause structure independently motivated elsewhere in Bantu grammar makes available the structure in (12) for object relativization in Dzamba-type languages, in which the bound relativizer and the verb stem appears in C and hence we observe "subject inversion".

An uparrow ($\uparrow$) on node α denotes the f-structure of the mother node of α, and a downarrow ($\downarrow$) denotes the f-structure of α. In (12), the annotation $\uparrow = \downarrow$ on the head noun (*imo-dondo* 'the-alligator') indicates that the f-structure of N's mother node is identical to its f-structure. This is the outermost f-structure labeled $f_{1,2}$. The annotation on the CP adjunct states that the f-structure of its mother node has an ADJUNCT (more precisely ADJUNCT-REL) attribute whose value is identified with the f-structure of CP. The annotation $\uparrow = \downarrow$ on C and S states that their f-structure is identical to the f-structure of the mother node (CP). ($\uparrow$ SUBJ) $= \downarrow$ on NP subject *zaki* ('Jack') denotes that the f-structure of the mother node (f_5) contains a SUBJ attribute whose value is the f-structure of NP (f_6). Note also that the object pronoun on the verb is represented as having a PRED value 'pro', which is co-indexed with the head noun.

(12) Dzamba-type languages ("inversion")



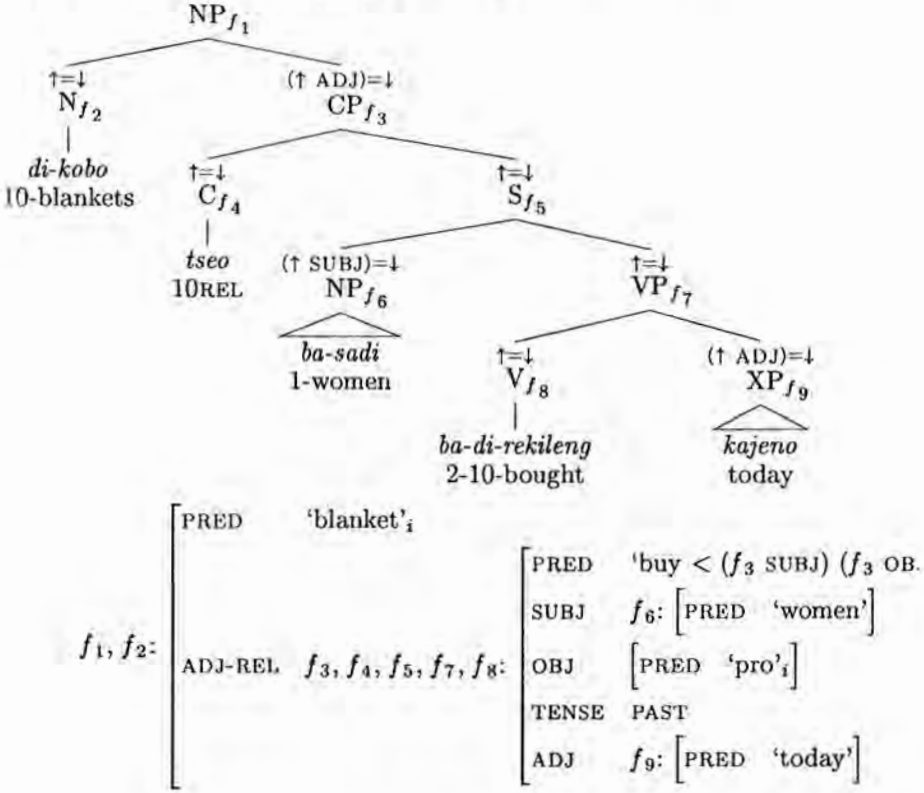
$$f_{1,2}: \begin{bmatrix} \text{PRED} & \text{'alligator'}_i \\ \text{ADJ-REL} & f_{3,4,5}: \begin{bmatrix} \text{PRED} & \text{'catch <}(f_3\ \text{SUBJ})\ (f_3\ \text{OBJ})\text{>'} \\ \text{SUBJ} & f_6: \begin{bmatrix} \text{PRED} & \text{'Jack'} \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'pro'}_i \end{bmatrix} \\ \text{TENSE} & \text{PAST} \end{bmatrix} \end{bmatrix}$$

The structure in (13) represents object relativization in Sesotho-type languages in which a free-standing relativizer appears in C, the verb in V, and has no "subject inversion". Here, the head noun is annotated ↑ = ↓ and thus maps to the same f-structure as that of the mother node (f_1), which is the outermost f-structure. The adjunct CP is annotated (↑ ADJ) = ↓, stating that the f-structure of the mother node (= the outermost f-structure) contains an attribute ADJUNCT whose value is identified with the f-structure of CP (f_3). The nodes C, S, VP, and V, annotated ↑ = ↓, all map to the same f-structure. (↑ SUBJ) = ↓ on NP *ba-sadi* 'women' states that the f-structure of the mother node (= the f-structure labeled $f_{3,4,5,7,8}$) has a SUBJ attribute whose value is the f-structure of the NP (f_6). Similarly the annotation (↑ ADJ) = ↓ on XP *kajeno* 'today' indicates that the f-structure of the mother node contains an attribute ADJUNCT and its value is identified with the f-structure of XP (f_9).

In both language types, the subject inside the relative clause is immediately dominated by the exocentric S node. Under this analysis, no parametric difference in subject position needs to be postulated for these language types. As shown, c- to f-structure correspondence mediated by

functional annotations provides the f-structure (grammatical and semantic) information that each c-structure node contributes. Each morpheme contributes relevant semantic and grammatical information in the f-structure; in accordance with the Lexical Integrity Principle, only fully inflected words can be c-structure nodes.

(13) Sesotho-type languages (no inversion)



2.3 Additional data from Swahili

Swahili presents additional support for the non-derivational analysis proposed above which posits only one subject position across the Bantu languages regardless of their relativization strategies. Swahili has two relativization constructions (see Keach 1980 for a more detailed discussion on Swahili relativization; all the Swahili examples are taken from Keach 1980): one is where the relative marker appears on a morphologically independent

relative verb *amba*, referred to as the *amba* relativizer here, as illustrated in (14).

(14) kitabu ambacho yule mtu a-li-ki-soma *amba* relativization
book REL that person 1-PAST-7-read
'the book which that person read' Swahili

The other relativization strategy is to use a bound relative marker on the main verb. One characteristic of this type of relativization is that, like Dzamba (Type I), when the object is relativized, the subject, normally preverbal, appears after the relativized verb. This is illustrated in (15).

(15) kitabu a-li-cho-ki-soma yule mtu. REL-V relativization
7book 1-PAST-REL-7-read that person
'the book which that person read' Swahili

I will refer to the former type with the relativizer *amba* as *amba* relativization, and the second type as REL-V relativization. The structural position of the constituents in these relativization constructions is fixed: in *amba* relativization, the subject cannot appear postverbally (after the main verb); by contrast, REL-V relativization does not allow the subject to precede the verb. This is illustrated by the ungrammaticality of the alternative positioning of the relevant constituents in (16a), *amba* relativization, and (16b), REL-V relativization.

(16) a. *kitabu ambacho a-li-ki-soma yule mtu cf. (14)
book REL 1-PAST-7-read that person

b. *kitabu yule mtu a-li-cho-ki-soma cf. (15)
book that person 1-PAST-REL-7-read

Swahili then exhibits both Dzamba-type relativization with a bound relativizer (and verb raising) and Sesotho-type with a free-standing relativizer (and no verb raising). *amba*-relativization can thus be assigned a structure like that given above in (13), and REL-V relativization can be assigned a structure like that in (12). Positing two subject positions for these different forms of relativization within a single language would be stipulative and unnecessary. More importantly, the above data from Swahili suggest that presence/absence of verb raising in object relativization does not represent a parametric choice which holds for the whole language. Rather, the syntax economically projects the morpho-syntactic features of the lexical resources of the language in question.

3 Deriving Relativization and Verb Raising in OT

In addition to Types I–III in the Bantu languages examined earlier in section 1, I consider two other language types here: the English type with either the complementizer *that* (e.g. *I liked the book that you lent me the other day.*) or a relative pronoun (e.g. *the picture which my mother took*), and head-final (SOV) languages with a morphological relativizer on the verb. An example of the latter type is shown in (17) from Korean.

(17) a. John-i Mary-lul manna-ss-ta.
John-NOM Mary-ACC meet-PAST-DECL
'John met Mary.'

b. John-i manna-n sal
John-NOM met-REL pr
'the person that John

The table in (18) provides a summary of the forms that object relativization can take across languages. From the left to right across the columns, the table lists the language type (referred to as Type I–V below), positions of the nominal head, relativizer, the verb, and the subject NP, and the category of the relativizer (e.g. affixal, relative pronoun).

(18)

	Positions	REL Category
I.	N-head REL-verb NP_{su}	V_{aff} bound to V in C
II.	N-head REL NP_{su} verb	C, free-standing
III.	N-head NP_{su} REL.verb	high tone on V
IV.	N-head REL.PRON NP_{su} verb	DP (or *that* in C)
V.	NP_{su} verb-REL N-head	V_{aff}, bound to V

I. Dzamba, Chishona III. Kirundi/Kinyarwanda V. Korean
II. Sesotho/Setswana IV. English.

The constraints in (19) derive the typology of relative clauses in (18). Although due to space limitations I will not be able to motivate each constraint adequately, these are all independently proposed elsewhere in the OT literature.[2]

(19) a. Head-L: An X^0 head aligns left in its immediate constituent.
b. Spine-R: An X^0 and its extended head align left in their immediate constituent.
c. Abut-REL(N-HD): REL and N-head must be adjacent.
d. *Lex-in-F: Avoid lexical head in functional head position.
e. Don'tProj: Do not project (violated by a maximal projection).

Head-L prefers head to precede complement; Spine-R prefers fully right-

branching structure with an X^0 head on the right. Abut-REL(N-HD), details of which are not discussed here due to space limitations, prefers the relativizer (realized in various ways) and the nominal head to be adjacent to each other. The last two constraints are as stated. The crucial constraint interaction that derives the variation in relative clauses summarized in (18) is given in (20).

(20) I. a ≫ c ≫ e ≫ d ≫ b
II. a ≫ c ≫ d ≫ e ≫ b
III. a ≫ e ≫ d ≫ c ≫ b
IV. a ≫ c ≫ d ≫ b, e
V. b ≫ a; e ≫ d ≫ c

Type I–Type IV are all head-initial languages, so Head-L ranks above Spine-R (a ≫ b) in all these language types. Among the constraints in c–e, in **Type I** languages (e.g. Dzamba, Chishona) that exhibit verb raising in object relatives, the Abut-REL(N-HD) constraint that requires the relativizer to be adjacent to the head noun is high-ranked. The next higher constraint DON'TPROJ forces the verb to appear in C at the cost of *Lex-in-F. In **Type II** languages (e.g. Sesotho/Setswana) the ranking of *Lex-in-F (d) and DON'TPROJ (e) is reverse: a morphologically independent relativizer occupies C, and the verb stays in V. **Type III** languages (e.g. Kirundi/Kinyarwanda) mark a relative clause by a grammatical tone on the verb inside the relative clause. This language type thus has the most economical structure syntactically. This is ensured by ranking DON'TPROJ above the other two constraints c and d.[3] In **Type IV** languages (English) the constraints Spine-R and DON'TPROJ "float" to yield more than one optimum (see, for example, Boersma (1997), Asudeh (1999) for floating constraints). The ranking Spine-R ≫ DON'TPROJ (b ≫ e) will yield a relative pronoun DP, resulting in one extra projection. The reverse ranking will yield the relativizer in C: this is one fewer projection, but since C, a co-head will be left-most in its local structure, this violates Spine-R more severely. The high-ranking *Lex-in-F ensures that for English, no lexical head appears in functional head position. In **Type V** languages (e.g. Korean) ranking of head positioning constraints (a and b) and the other three is not crucial. Spine-R ≫ Head-L ensures the head-final structure.

The analysis sketched in this section highlights that what has been referred to as 'stylistic inversion' is obligatory verb raising, and once we take into account a wider typology of relative clauses, there is nothing peculiar about the type of relativization found in the subset of Bantu languages. Having examined a rather small typology of relative clauses, it seems unnecessary to posit two different subject positions across the Bantu languages

only to accommodate verb raising in object relativization.

4 Conclusion

In this paper, I hope to have shown that the presence/absence of verb raising in Bantu relativization reflects a principled interaction of constraints on the positioning of REL with respect to the nominal head (Abut-REL(N-HD)), verb positioning (*Lex-in-F), and structural economy (Don'tProj). The output-based analysis sketched here thus eliminates multiple empty categories, a series of movements that are difficult to motivate elsewhere in the grammar of the Bantu languages, and stipulation of two structural positions for subject.

Notes

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[1] As will become clearer, OT takes the view that the lexicon is derived by interaction of universal constraints on the well-formedness of structure, as opposed to the "bottom-up" view that words and morphemes derive (or project) structure.

[2] See Sells (2001) on (19a,b), Morimoto (2001) on (19c), and Bresnan (In Press) on (19d,e).

[3] Here, the high tone on the verb that indicates relativization is taken to be the realization of REL for the abutment constraint.

References

Asudeh, Ash. 1999. Linking and optionality in Marathi: An Optimality Theory analysis. Paper presented at the Joint Stanford-Santa Cruz Optimal Typology Workshop, November 1999. Available on-line at `http://www.stanford.edu/~asudeh`.

Boersma, Paul. 1997. How we learn variation, optionality, and probability. Available on-line at `http://ruccs.rutgers.edu/roa.html` (ROA-221-109).

Bokamba, Eyamba Georges. 1971. Specificity and definiteness in Dzamba. *Studies in African Linguistics* 2, 217–238.

Bokamba, Eyamba Georges. 1976. *Question Formation in Some Bantu Languages.* Doctoral dissertation, Indiana University, Indiana.

Bresnan, Joan. 2001. *Lexical-Functional Syntax.* Oxford, Blackwell Publishers.

Bresnan, Joan. In Press. Optimal syntax. In Joost Dekkers, Frank van der Leeuw, and Jeroen van de Weijer (eds.), *Optimality Theory: Phonology, Syntax and Acquisition.* Oxford University Press.

Bresnan, Joan, and Sam A. Mchombo. 1986. Grammatical and anaphoric agreement. In Anne M. Farley, P.T. Farley, and K.-E. McCullough (eds.), *Papers from the Parasession on Pragmatics and Grammatical Theory at the Twenty-Second Regional Meeting*, Vol. 22(2), 278–297, Chicago, IL. Chicago Linguistic Society.

Bresnan, Joan, and Sam A. Mchombo. 1987. Topic, pronoun, and agreement in Chichewa. *Language* 63(4), 741–782.

Dalrymple, Mary, Ronald M. Kaplan, John T. Maxwell, and Annie Zaenen (eds.). 1995. *Formal Issues in Lexical-Functional Grammar.* Stanford, CA, CSLI Publications.

Demuth, Katherine, and Carolyn Harford. 1999. Verb raising and subject inversion in Bantu relatives. *Journal of African Languages and Linguistics* 20(1), 41–61.

Demuth, Katherine, and Sheila Mmusi. 1997. Presentational focus and thematic structure in comparative Bantu. *Journal of African Languages and Linguistics* 18(1), 1–19.

Givón, Talmy. 1972. Pronoun attraction and subject postposing in Bantu. In Paul M. Peranteau, Judith N. Levi, and Gloria C. Phares (eds.), *The Chicago Which Hunt: Papers from the Relative Clause Festival*, 190–197. Chicago, IL, Chicago Linguistic Society.

Golston, Chris. 1995. Syntax outranks phonology: Evidence from Ancient Greek. *Phonology* 12(3), 343–368.

Grimshaw, Jane. 1997. Projection, heads, and Optimality. *Linguistic Inquiry* 28(3), 373–422.

Harford, Carolyn, and Katherine Demuth. 1999. Phonology outranks syntax: An Optimality approach to subject inversion in Bantu relatives. MS. University of Zimbabwe and Brown University.

Keach, Camilla Nevada Barrett. 1980. *The Syntax and Interpretation of the Relative Clause Construction in Swahili.* Doctoral dissertation, University of Massachusetts, Amherst, MA.

Kimenyi, Alexandre. 1980. *A Relational Grammar of Kinyarwanda.* Berkeley, CA, University of California Press.

King, Tracy Holloway. 1995. *Configuring Topic and Focus in Russian.* Stanford, CA, CSLI Publications.

Kinyalolo, Kasangati Kikuni Wabongambilu. 1991. *The SPEC-Head Agreement Hypothesis in KiLega.* Doctoral dissertation, University of California Los Angeles, Los Angeles, CA.

Kroeger, Paul. 1993. *Phrase Structure and Grammatical Relations in Tagalog.* Stanford, CA, CSLI Publications.

McCloskey, James. 1996. On the scope of verb movement in Irish. *NLLT* 14(1), 47–104.

Morimoto, Yukiko. 2001. Verb raising and phrase structure variation in OT. In Peter Sells (ed.), *Formal and Empirical Issues in Optimality-Theoretic Syntax.* Stanford, CA, CSLI Publications. To appear.

Mugane, John. 1996. *Bantu Nominalization Structures.* Doctoral dissertation, University of Arizona.

Nordlinger, Rachel, and Louisa Sadler. 2000. Tense as a nominal category. In Miriam Butt and Tracy Holloway King (eds.), *On-Line Proceedings of the LFG-00 Conference*, Stanford, CA. CSLI Publications. `http://www-csli.stanford.edu/publications`.

Pullum, Geoffrey, and Arnold Zwicky. 1988. 'The syntax-phonology interface'. In Frederick Newmeyer (ed.), *Linguistics: The Cambridge Survey*, Vol. 1, 255–280. Cambridge, UK, Cambridge University Press.

Rice, Curt, and Peter Svenonius. 1997. Prosodic V2 in Northern Norwegian. Paper presented at the Hopkins Optimality Theory Workshop, May 9–12, Johns Hopkins University.

Sabimana, Firmard. 1986. *The Relational Structure of the Kirundi Verb.* Doctoral dissertation, Indiana University, Indiana.

Sadler, Louisa. 1998. English auxiliaries as tense inflections. *Essex Research Reports.*

Sells, Peter. 2001. *Structure, Alignment and Optimality in Swedish.* Stanford, CA, CSLI Publications. Forthcoming.