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5 Conclusion

In this paper, we have argued that the so-called 'double relative clause' in Ko-
rean is derived from a double nominative construction by relativizing the first
nominative NP which originates in IP-adjoined position. Under our analysis,
there is no island violation in the apparent 'double relative clause' formation.
Therefore, the operator movement analysis for relative clauses in Korean can
be maintained. Our analysis predicts that if a language has a double nom-
inative construction of the sort presented here, it should also have apparent
'double relative clauses'. Verifying this prediction is left for future research.

References

Gundel, Jeanette 1985 'Shared knowledge and topicality. *Journal of Pragmatics* 9:1,
    83–107.

Han, Jongim. 1992. The status and reference of empty categories in relative clauses.
    In *Proceedings of the 1992 Seoul International Conference on Linguistics*, The
    Linguistic Society of Korea, Seoul, 529–536.

Hasegawa, Nobuko 1984. On the so-called 'zero pronouns' in Japanese. *The Linguistic
    Review* 4. 280–341.

Horn, Larry 1986. Presupposition theme, and variations. In *Papers from the 22nd
    Regional Meeting of the Chicago Linguistic Society.*

Huang, C.-T James. 1989. Pro Drop in Chinese: a generalized control theory. In Jaeggli
    and Safir (eds.), *The Null Subject Parameter*. Dordrcht: Kluwer.

Kang, Young-se 1986. *Korean syntax and universal grammar*, Doctoral dissertation,
    Harvard University

Kim, Young-joo 1990. *The syntax and semantics of Korean Case. The interaction
    between lexical and syntactic levels of representation.* Doctoral dissertation, Har-
    vard University

Reinhart, Tanya 1981. Pragmatics and linguistics: An analysis of sentence topics
    Philosophica 27, 53–94.

Sohn, Ho-min 1980. Theme-prominence in Korean. *Korean Linguistics. Journal of
    the International Circle of Korean Linguistics*

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The Phonology-Syntax Interface
in North Kyungsang Korean

William J. Idsardi and Sun-Hoi Kim

1 Introduction

In North Kyungsang Korean (NKK), two-word compounds and phrases al-
ways surface with a single high tone, while some larger compounds and
phrases have more than one high tone. Importantly, the tonal realization of
compounds is entirely parallel to that of phrases, and there is an exact trade-
off between compound structure and phrasal structure in tonal realization.
The theoretical importance of this trade-off is discussed at the end of section
4. In this paper, we investigate the interaction between phonology and syntax
in the realization of high tones in North Kyungsang Korean. In other words,
the issue explored in this article is how we can capture the relation between
the syntactic structure and the phonological domain within which only one
high tone is assigned (sometimes termed the "accentual phrase").

In this study, we will show that the correct calculation of high tone
placement follows directly from the serial application of two phrasing rules
and a constraint on phonological phrase (P-phrase) construction. The first
rule, Left-boundary insertion (LI), provides the interface with the morpho-
syntax. LI inserts a left P-phrase boundary at the beginning of a branching
compound or phrase. Within the phonology proper, the second rule, Iterative
Constituent Construction (ICC), sub-divides the groupings provided by the
interface rule without regard to syntactic constituency, attempting to form
binary groups from right to left. However, ICC is subject to a constraint,
Avoid (x(, which prevents it from splitting up a ternary group, as this would
result in a unary constituent. Therefore, in cases where the LI rule by itself
would predict large domains (more than three phonological words) these
domains are sub-divided by the ICC to produce smaller binary domains and
an initial binary or ternary domain, an effect familiar from footing in word-
stress systems such as Garawa.

We will also demonstrate that the P-phrases built by our algorithm,
which correctly account for high tone placement, cannot be generated with
other theories of the phonology-syntax interface, either end-based (e.g. Sel-
kirk and Shen 1990) or relation-based (e.g. Nespor and Vogel 1986). We
will further show that Kenstwowicz and Sohn's (1997, 1999) Optimality
Theory (OT) account of NKK P-phrasing cannot capture the relevant aspects
of the phonology-syntax mapping. In particular, we argue that it is the pres-

ence of branching structure that conditions P-phrasing rather than head-complement relations or edge alignment to maximal projections in the syntax

The paper is organized as follows. In section 2, we briefly describe the tonal patterns of simple words, compounds, and phrases in NKK In section 3 we discuss previous theories of P-phrasing and the problems that ensue for these theories in explaining the NKK P-phrasing. In section 4, we introduce our algorithm for the NKK P-phrasing and show that our proposal gives principled explanations for the parallelism between compound and phrasal tonal patterns, for the contrast between left- and right-branching structures, and for the rhythmic sub-division of left-branching structures Finally, Section 5 provides a brief summary of the results of our analysis

2 NKK Tonal Patterns

In NKK, simple words exhibit one of four tonal patterns The four types of tonal patterns are illustrated in trisyllabic words in (1), where acute accents indicate high tone (H)

(1) a. múcíke 'rainbow'   (HHL, H on first two syllables)
    b. ácime 'aunt'   (HLL, H on first syllable)
    c. apúci 'father'   (LHL, H on penultimate syllable)
    d. satalí 'ladder'   (LLH, H on final syllable)

As is the case in various dialects of Japanese (including the standard language), the tonal patterns in (1) are not predictable from the segmental or syllabic composition of the form. As such, the tonal patterns must be memorized for each lexical item. If we analyze (1a) as a doubly-linked H (in accordance with the Obligatory Contour Principle), then we see a broad generalization—each word receives exactly one H. This assignment of a single H is also observed in all two-word compounds and phrases, as illustrated in (2) and (3). (In the following examples, underlining indicates vowels that have H in their isolation forms and we employ the following abbreviations: A = adjective, N = noun, V = verb, S = subject, O = object).

(2) Two-word compounds
    a napi-nekthai   b íyáki-pottali   c. tóksuli-pap   d totuk-koyáNi
      'butterfly' 'necktie'   'story' 'pack'   'eagle' 'rice'   'burglar' 'cat'
      'bow tie'   'story teller'   'victim'   'stray cat'

(3) Two-word phrases, including OV and SV
    a. (alumtáun_A mucike_N)   b. (kímchi_O mENnUnta_V)
       'beautiful rainbow'   '[e] eats Kimchee'

    c. (ácimE_N kapaN_N)   d. (akássi-ka_S canta_V)
       'aunt's bag'   'lady sleeps'

We will not discuss the intricacies and mechanisms in placing H in compounds and phrases; this is explained in detail in Kim (1999) In the present article we rely only on the fact that there is one prominent tone per P-phrase. It is most important to note the parallelism in the tonal patterns of compounds and phrases, particularly the fact that even the SV combination in (3d) has only a single high tone The parallelism between compounds and phrases and the limit of one H per P-phrase are the crucial empirical facts which must be covered in any adequate account of NKK P-phrasing, and various theories will be compared on this basis.

In contrast to two-word combinations, compounds and phrases composed of three or more words can exhibit more complex tonal patterns, as shown in (4) and (5)

(4) P-phrasing in 3- and 4-word compounds
    a. (seNsÉn-kake-cuin)   b   (seNsÉn-kake) (cúin-moim)
       'fish' 'store' 'owner'   'fish' 'store' 'owner' 'meeting'
       'fish store owner'   'association for fish store owners'

(5) P-phrasing contrasts in 3-word phrases
    a [[A N]_S V]   b. [S [O V]]
      (alUmtáun akassi-ka tallinta)   (apúci-ka)(koyáNi-lul manciEssta)
      'beautiful' 'lady' 'runs'   'father' 'cat'   'touched'
      'beautiful lady runs'   'father touched a cat'

Cases such as (4a) and (5a) have only one H, and therefore one P-phrase, whereas others, such as (4b) and (5b) have more than one H (and P-phrase). These contrasts raise crucial questions as to how word strings are parsed into P-phrases. In the next section, we discuss previous theories of P-phrasing and examine whether they can account for NKK P-phrasing as reflected in the high tone assignment

3 Previous Analyses

3.1 End-based and Relation-based Approaches

There have been three main approaches to the phonology-syntax interface in derivational generative phonology: direct reference to syntax (e.g. Kaisse 1985), end-based construction of P-phrases (e g Selkirk and Shen 1990), and relation-based construction of P-phrases (e g. Nespor and Vogel 1986). We

will not discuss direct-reference theories in this article. Our basic analytic assumption is that one high tone is assigned per P-phrase in NKK. Then, if the formation of P-phrase is defined in relation-based and end-based theories as in (6), some of the NKK P-phrases can be explained, as shown in (7). The examples in (7) are drawn from N-J. Kim 1997 and S-H. Kim 1999.

(6) a. Relation-based NKK P-phrasing
A head and its complement (branching or not) form a P-phrase
b. End-based NKK P-phrasing
The left edge of each X^{max} coincides with the left edge of a P-phrase

(7) a.

XP   (A N)
        (O V)
YP   X (alUmtáun$_A$ mucike$_N$)   'beautiful rainbow'
(Y   X) (kímchi$_O$ mENnUnta$_V$)   '[e] eats Kimchee'

b.

XP   (Adv A N)$_\phi$
        (A N V)$_\phi$
YP   X (méu$_{Adv}$ alUmtaun$_A$ napi$_N$)$_\phi$
        'very beautiful butterfly'
ZP   Y (hayan$_A$ polí-lul$_N$ mENnUnta$_V$)$_\phi$
(Z   Y X) '[e] eats white barley'

The relation-based approach of (6a) predicts the P-phrasings in (7) because in both cases the final head is grouped with its complement. Likewise, the end-based approach of (6b) predicts the P-phrasings in (7) because in both cases the left edge of every maximal projections is aligned with the left edge of a P-phrase. The fact that a single high tone is assigned to each of the phrases in (7) supports these predictions. However, other cases, to which we now turn, show that the approaches in (6) are empirically inadequate.

3.2 An OT Analysis of NKK Phonological Phrasing

The P-phrasing algorithms of (6) cannot handle the cases in (8)-(10), from N-J. Kim (1997), S-H. Kim (1999), and Kenstowicz and Sohn (1999).

(8)

S   (S V)
        (toNseN$_{NP}$ cwúkEssta$_{VP}$) 'brother died'
NP   VP (akássi-ka$_{NP}$ canta$_{VP}$)   'lady sleeps'
(X   Y)$_\phi$ *not* *(X)$_\phi$ (Y)$_\phi$ (toNséN-i$_{NP}$ meNnUnta$_{VP}$) 'brother eats [e]'

As shown in (8), contrary to the prediction made by the end-based and relation-based algorithms in (6), when each of NP and VP consists of a single word, the NP and the VP are not separated but instead are grouped together forming a P-phrase, as shown by the fact that a single high tone is assigned to the string of NP and VP. These algorithms, further, cannot explain why the VP cannot form a separate P-phrase in the left-branching structure of (9a), while the VP separately forms a P-phrase in the right-branching structure of (9b).

(9) a. S versus b. S

NP   VP   NP   VP
A   N   NP   V
(X   Y   Z)   (X) (Y   Z)
not *(X Y) (Z)
[[A N]$_S$ [V]$_{VP}$]   [S [O V]$_{VP}$]
(alUmtáun akassi-ka tallinta) (apúci-ka)(koyáNi-lul manciEssta)
'beautiful lady runs'   'father touched a cat'

Finally, they also incorrectly predict that all the words in (10) should be grouped together in a single P-phrase.

(10)

VP
NP   V   [[[Adv A] N] V]$_{VP}$
AP   N   (méu alUmtaun) (yécá-lul mannassta)
          '[e] met a very beautiful woman'
Adv A
(W   X) (Y Z) *not* *(W X Y Z)

These incorrect predictions are also made by Truckenbrodt's (1995, 1999) OT-based account of P-phrasing, based on the constraints in (11).

(11)   Wrap-XP: Each XP is contained in a P-phrase
       Align-XP-L: For each XP there is a P-phrase such that the left edge
               of XP coincides with the left edge of the P-phrase
       (Truckenbrodt 1999: 223, 228)

Wrap-XP also predicts that (10) should be parsed as a single P-phrase, and Align-XP-L predicts that (8) should be parsed into two P-phrases. Since

Kenstowicz and Sohn (1997, 1999) have already revised Truckenbrodt's theory and have provided an account specifically of NKK P-phrasing, we will concentrate our discussion on their analysis

Kenstowicz and Sohn propose the constraints and ranking in (12)

(12)   Align-XP$_{BR}$-L: The left edge of each *branching* XP coincides
                                  with the left edge of a P-phrase
          » Min-Bin: P-phrases must contain at least two P-words
          » Max-Bin: P-phrases must contain at most two P-words
          » Wrap-XP

The more specific constraint, Align-XP$_{BR}$-L, plays a more crucial role in NKK P-phrasing, over-riding the general constraint Align-XP-L. The trend toward binary groups exhibited in (10) is handled by Min-Bin and Max-Bin. They show that the constraint ranking in (12) will correctly analyze the problematic cases of (8–10) The three tableaux in (13) show how the proposed ranking of constraints evaluates output candidates and selects correct P-phrases as the optimal outputs

(13)

			Align-XP$_{BR}$	Min-Bin	Max-Bin
a.	☞	(tonseN$_{NP}$ cwúkEssta$_{VP}$)			
		(tonséN$_{NP}$) (cwúkEssta$_{VP}$)		*!*	
b.	☞	(alUmtáun$_A$ akassi-ka$_S$ tallinta$_V$)			*
		(alUmtáun$_A$ akassi-ka$_S$)(tállinta$_V$)		*!	
c	☞	(méu$_{Adv}$ alUmtaun$_A$) (yécá-lul$_N$ mannassta$_V$)			
		(méu$_{AdvP}$ alUmtaun$_A$ yeca-lul$_N$ mannassta$_V$)			*!*

Despite its success with (8)-(10), this analysis has serious problems in explaining the contrast between left- and right-branching structures and the parallelism between tonal patterns in compounds and phrases. In other words, their algorithm, as it stands, cannot explain the P-phrasing of compounds and syntactic phrases that contain compounds, as illustrated in the next section.

4 Our Proposal: Visibility of Compounds and Rhythmicity

Not all the compounds in NKK have only one high tone. Interestingly, there is an exact parallelism between the tonal patterns in compounds and those in phrases in NKK. Let us consider the examples in (14)

(14)   a   seNsÉn-kake-cuin
                'fish' 'store' 'owner'
                'fish store owner'
                (seNsÉn-kake-cuin)

          b.   seNsÉn-kake-cúin-moim
                'fish' 'store' 'owner' 'association'
                'Association for fish store owners'
                (seNsÉn-kake)(cúin-moim)
                not * (seNsÉn-kake-cúin-moim)

While a single high tone is assigned to the left-branching three-stem compound in (14a), two separate high tones are assigned to the left-branching four-stem compound in (14b), indicating that, like left-branching four-word phrases, this four-stem compound is phonologically divided into two separate groups, *(seNsÉn-kake)* and *(cúin-moim)* This similarity in tonal and phrasing patterns between compounds and phrases in NKK is also found in the contrast between left- and right-branching structures in (15)

(15) a. Left-branching compound   b   Right-branching compound

          hankuk muyoN   muyoN hyEphoy
          (hánkúk-muyoN-hyEphoy)   (hánkúk)(múyóN-hyEphoy)
          'Association for Korean dance'   'Korean Association for dance'

While the left-branching compound in (15a) has a single high tone and thus a single P-phrase, the right-branching compound in (15b) has two separate high tones indicating that this compound is divided into two P-phrases. The problem for Kenstowicz and Sohn's analysis is that the proposed ranking among constraints cannot distinguish (15a) from (15b) in phrasing these

compounds phonologically; it incorrectly selects the mono-phrasing com-
pounds as optimal outputs in both cases, as shown in (16).

(16)

	Align-XP$_{BR}$	Min-Bin	Max-Bin
☞ (hánkúk-muyoN-hyEphoy)			
(hánkúk) (múyóN-hyEphoy)		*!*	

Further problems for their analysis arise in the P-phrasing of syntactic
structures containing compounds. We will discuss these cases below, com-
paring their analysis with our proposal.

The parallel P-phrasing pattern in NKK compounds and phrases leads us
to the conclusion that the internal branching of compounds should not be
ignored in the NKK P-phrasing; compound structure must be syntactically
significant. In other words, the branchingness of compounds is visible in
syntax in NKK. It also says that the NKK P-phrasing is related to the internal
branching of a syntactic phrase rather than its syntactic constituency in terms
of maximal projections. The reliance of P-phrasing on overt branchingness
accords with recent findings in Chomsky's (1995) Minimalist Program; we
will not pursue this topic in this article, but leave this tantalizing connection
for future research. We take this reliance on branchingness to be the sole
basis of the syntax-phonology interface in NKK. The interface provides
drastically impoverished representations to the phonology. In NKK the prop-
erty of syntactic branchingness is preserved in the phonology via the inser-
tion of left metrical boundaries, and therefore the interface mapping function
is that given in (17).

(17)   NKK Syntax-Phonology Interface: Edge:LLL
        Insert a *left* parenthesis to the *left* of the *left*-most element for every
        branching structure
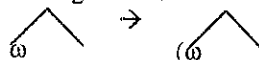
The interface rule of (17) requires that, if the node wholly containing the
elements of a P-word is immediately dominated by the higher node via a left
branch, a left boundary of P-phrase is inserted to the left of the P-word. The
interface function thus provides a rough-cut P-phrasing from the syntax. In
the phonology proper, we observe further sub-division of the crude P-
phrases to approximate binary P-phrases, as in (10) and (14b). By locating
the sub-division process within the phonology we correctly predict that the
sub-dividing will be done without considering any syntactic information. By
constructing a modular theory of P-phrasing we correctly predict the limits

of the syntactic influences on P-phrasing. Binary groups are constructed by
the rule (18a) which is subject to the condition (18b).

(18)   a.   Iterative Constituent Construction (ICC)
              Insert a left parenthesis every two P-words from right to left
        b.   Avoid (ω(: Do not create the configuration *(ω(

The net effect of Avoid (ω(is to retain an existing ternary group instead of
subdividing it into a unary group and a binary group. Notice that the inter-
face rule (17) is not subject to this condition, so that in right-branching
structures unary constituents are allowed. The modular approach predicts
such differences in the status of unary constituents.

This algorithm in (17–18) is an extension of Idsardi's (1992) Simplified
Bracketed Grids (SBG) model of metrical theory to the phrase-level; while
the line 0 boundaries of metrical grid are inserted on the word-level, it is line
1 boundaries that are inserted on the phrase-level in NKK. In other words,
the function of our algorithm is to insert left parentheses onto line 1.

This algorithm groups every two-word compound or phrase, including
the S V case, as a single P-phrase. It can also differentiate the right-
branching structures from the left-branching structures in the P-phrasing of
both phrases and compounds. Let us here examine the phrases of (9) and the
compounds of (14) again in our analysis.
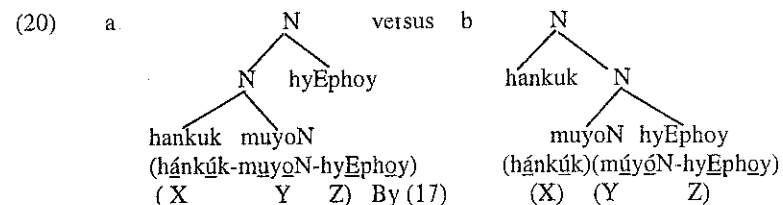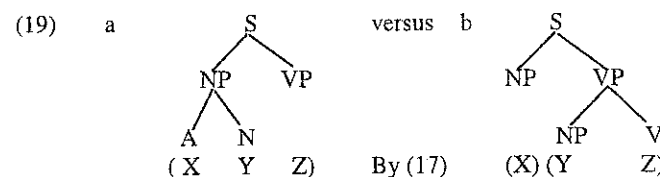
As demonstrated in (19) and (20), since the rule (17) inserts a left boundary
of P-phrase to the left of every branching structure, regardless of the syntac-
tic constituency of the structure, the right-branching three-word phrase (19b)
and compound (20b) have two separate P-phrases, grouping the second and

third P-words as a P-phrase separately from the first P-word Four- and five-word left-branching constructions are illustrated in (21)

(21) a Four-word phrases, compounds b. Five-word phrases, compounds

[[[W X] Y] Z]			[[[[V W] X] Y] Z]	
(W X Y Z	By (17)		(V W X Y Z	
(W X (Y Z	By (18)		(V W X (Y Z	

The P-phrasing of (21a) explains the examples in (10) and (14), and the P-phrasing of (21b) shows that the left-branching five-word phrases and compounds in NKK are phonologically phrased as $(\omega\ \omega\ \omega)(\omega\ \omega)$ (see N-J Kim 1997, S-H Kim 1999, and Kenstowicz and Sohn 1999 for more examples of this type of P-phrases). This analysis also predicts that, in the case of right-branching phrases and compounds of more than three words, each P-word consists of a separate P-phrase. While we omit discussion of this issue in detail here, the P-phrasing of large right-branching structures is also supported by N-J. Kim (1997) and S-H. Kim (1999).

Finally, let us compare this analysis with Kenstowicz and Sohn's analysis, examining the P-phrasing of syntactic structure containing a compound in (22).

(22)   [[ppalkán]$_A$ [nápi-nekthai]$_N$]$_{NP}$
            'red'   'butterfly' 'tie'
            'red bow-tie'
            (ppalkán)(nápi-nekthai)
            not *(ppalkan nápi-nekthai)
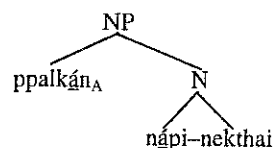
While our analysis correctly predicts that the embedded compound is grouped as an independent P-phrase separately from the preceding adjective P-word, *ppalkan* 'red,' Kenstowicz and Sohn's OT analysis incorrectly selects the candidate grouping the adjective *ppalkan* and the compound *napi-nekthai* 'bow-tie' together, as an optimal output, as shown in the following tableau.

(23)

	Align-XP$_{BR}$	Min-Bin	Max-Bin
☞ (ppalkan nápi-nekthai)			*
(ppalkán) (nápi-nekthai)		*!	

Perhaps more surprisingly, (18) can sub-divide constituents so as to break a compound up so that part of it is phrased with another word One such case is illustrated in (24)

(24)   [[seNsÉn-kake-cúin]$_N$ -ul]$_{NP}$ pwassta]$_{VP}$ '[e] saw a fish store owner'
            'fish' 'store' 'owner' –obj   'saw'
            (seNsÉn-kake- cúin-ul pwassta   By (17)
            (seNsÉn-kake (cúin-ul pwassta   By (18)
            not *(seNsÉn-kake- cúin-ul pwassta)

Kenstowicz and Sohn's analysis incorrectly predicts that this structure can be parsed in the manner of other VP's consisting of two syntactic words.

Of course there are ways in which Kenstowicz and Sohn's analysis can be modified to handle the data involving compounds. The obvious answer is to add a second battery of constraints referring to compounds instead of XP's That is, we could add a constraint Align-Compound$_{BR}$-L to deal with data such as (15) But to deal with more complicated cases, we must be able to trade-off violations of Align-Compound$_{BR}$-L for violations of Align-XP$_{BR}$-L That is, these two constraints must be crucially tied in order to capture the exact parallelism between P-phrasing in compounds and phrases Alternatively, Kenstowicz and Sohn's analysis could follow the account given here and examine branchingness without reference to syntactic type, replacing Align-XP$_{BR}$-L with Align-BR-L.

Even if these remedies are taken, there remains one major difference between the two approaches The analysis given in this paper, being highly modular, predicts very limited interactions between syntax and phonology. The modular theory predicts that P-phrase sub-division through (18) should be impervious to syntactic conditioning. This is the correct result for NKK, and it would be of great advantage to NKK language learners if this property followed from principles of Universal Grammar rather than being a contingent property of constraint rankings which the learner would have to acquire. That is, the modular theory allows for a much smaller range of grammars and is thus the preferable theory on the grounds of increased simplicity and learnability.

5 Conclusion

In this paper, we have shown that the correct calculation of high tone placement in NKK follows directly from the modular, serial application of two P-phrasing rules: an interface rule (Edge:LLL, (17)) and a rule for sub-dividing the rough-hewn P-phrases created at the interface (ICC, (18)) Our modular approach predicts the insensitivity of the ICC rule to syntactic information. This result must instead be stipulated in OT-based theories We have also shown that the P-phrases built by the algorithm proposed in this paper, which correctly account for high tone placement, cannot be generated with

other theories of the phonology-syntax interface. In particular, we have ar-
gued that it is the presence of branching structure that conditions P-phrasing
rather than head-complement relation or edge alignment to syntactic maxi-
mal projections.

References

Chomsky, Noam. 1995 *The minimalist program* Cambridge, Mass : MIT Press
Idsardi, William 1992. The computation of prosody Doctoral dissertation, MIT
Kaisse, Ellen 1985. *Connected Speech: the interaction of syntax and phonology*
     Orlando: Academic Press
Kenstowicz, Michael, and Hyang-Sook Sohn 1997 Phrasing and focus in North
     Kyungsang Korean In *Certamen Phonologicum III,* ed Pier Marco Bertinetto,
     Livio Gaeta, Georgi Jetchev, and David Michaels, 137-156 Turin: Rosenberg
     and Sellier.
Kenstowicz, Michael, and Hyang-Sook Sohn 1999 Phonological phrasing in
     Kyungsang Korean and other languages [Hand-out of a talk presented in
     ISOKL 8, Harvard July 17 1999]
Kim, No-Ju 1997 Tone assignment, and their interaction in North Kyungsang Ko-
     rean: a correspondence theory account Doctoral dissertation, the Ohio State
     University
Kim, Sun-Hoi 1999 The metrical computation in tone assignment Doctoral disser-
     tation, University of Delaware.
Nespor, Marina, and Irene Vogel 1986. *Prosodic phonology* Dordrecht: Foris.
Selkirk, Elizabeth, and Tong Shen 1990. Prosodic domains in Shanghai Chinese In
     The phonology-syntax connection, eds Sharon Inkelas and Draga Zec, 313-338
     Chicago: University of Chicago Press
Truckenbrodt, Hubert 1995 Phonological phrases: Their relation to syntax, focus, and
     prominence. Doctoral dissertation MIT
Truckenbrodt, Hubert 1999. On the relation between syntactic phrases and
     phonological phrases *Linguistic Inquiry* 30 219-255.

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Acquisition of Constraints on Forward Coreference

Becky Kennedy

1 Introduction: Models of Condition C Acquisition

Binding Theory, which handles the interpretation of NPs under various lo-
cality conditions, represents a major segment of our adult knowledge of lan-
guage In particular, Binding Condition C, given in (1), is generally taken to
entail that an *R-expression* (referring expression, or full NP) cannot be *bound*
by (c-commanded by and coindexed with) a pronoun, where c-command can
be defined as in (2)

(1) An R-expression is free (Chomsky 1986)
(2) *C-command*: Node A c-commands node B iff the first branching
     node above A dominates B and neither A nor B dominates the other
     (Reinhart 1976).

Condition C yields the contrast in (3)

(3) a. Max_i said that he_i loved Paris
     b. *He_i said that Max_i loved Paris
     c. Before he_i went to Rome, Max_i visited Paris

It has been noted (Carden 1986, Ingram 1989, O'Grady 1997, Taylor-
Browne 1983) that full development of Condition C may unfold over the
course of a number of years Carol Chomsky (1969) detailed an acquisition
sequence for Condition C that included a first stage in which no syntactic
constraint was observed, with the child permitting any full NP to serve as
antecedent to a pronoun in the same sentence. At about 3 or 4 years of age,
the child showed a linear order sensitivity, such that a pronoun could not pre-
cede its antecedent A third stage appeared at about 5 or 6 years: A pronoun
now could not precede its antecedent unless it occupied a syntactically subor-
dinate position, yielding the contrast between good backward coreference
examples like (3c) and blocked backward examples like (3b) At this third
stage, a pronoun could always follow its antecedent, so that the forward
coreference in (3a) would always be possible. Achievement of this third de-
velopmental stage in the acquisition of Condition C reflected a sensitivity to
the structural relation of c-command and permitted the child to produce
adultlike judgments on sentences like (3a–c)