Specification of unmarked features and coda neutralization

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Hong, Soonhyun. 1999. Specification of unmarked features and coda neutralization. *Linguistics* 7-2, 163-182. Smolensky 1993, Prince & Smolensky 1993, and Lombardi 1997 argue that all unmarked features should be specified underlyingly. Then the question is: how does an unmarked feature arise after deletion of a feature in coda neutralization? When we follow the full-feature specification hypothesis, /t/, for example, is underlyingly specified for [+ant] under the Cor node. In Korean, post-alveolar /c/ gets neutralized to [t] in coda. This neutralization involves deletion of [-ant] under the Cor node. Then how does [+ant] emerge for the surfacing neutralized [t]? This paper responds to this question by introducing default implication in Optimality Theory, which is similar in nature to redundant implication in Itô, Mester & Padgett 1995. (Inha University)

1. Introduction

In Korean, there is a Coda Neutralization (hereafter, CN) phenomenon, in which all labial and velar stops change to homorganic plain stops (/p, p', pʰ/->[p] and /k, k', kʰ/->[k]) and all coronal obstruents to [t] (/t, t', tʰ, s, s', c, c', cʰ/->[t]), in coda position.

(1) a. /supʰ/   sup   'forest'

      /supʰ-e/   supʰ-e   'forest-at'

   b. /puəkʰ/   puək   'kitchen'

      /puəkʰ-e/   puəkʰ-e   'kitchen-to'

   c. /nac/   nat   'day'

/nac-e/	nac-e	'day-during'
d. /nas/	nat	'a scythe'
/nas-il/	nas-il	'a scythe-Acc'

Given the data, we observe that an obstruent can retain in coda neither [sg], [cg], [+cont], nor [-ant]. In a constraint approach, this can be explained via the following negative NoCoda constraints as shown in (2a) below, as an obstruent cannot retain [lar]/[+cont]/[-ant] in coda. On the other hand, we can formulate MAXONSET constraints for the onset-faithfulness of input [lar]/[+cont]/[-ant], since [lar]/[+cont]/[-ant] in the input can surface in onset whereas the same input features cannot in coda[1] at the expense of deleting those features (cf. Hong 1996).

(2) a. NoCoda[lar]/[+cont]/[-ant]

    [lar]/[+cont]/[-ant] are not allowed in coda.

  b. MAXONSET[lar]/[+cont]/[-ant][2]

    Onsets should be faithful to underlying [lar]/[+cont]/[-ant].

  c. Constraint Ranking

    NoCoda[lar]/[+cont]/[-ant], MAXONSET[lar]/[+cont]/[-ant]

The formulation of MAXONSET constraints above follows the proposal of positional markedness in Beckman 1998 and Lombardi 1997, which says that onset is more privileged position than coda. Namely, the consonant inventory in Coda is a less-marked subset of the full consonant inventory in Onset across languages (Beckman 1997 for discussion of positional faithfulness and Selkirk 1994). In Korean,

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1. In this paper, we assume that coda neutralization involves deletion of the Lar node, [+cont], and [-ant]. The deletion of the Lar node follows Lombardi 1995 since [voice] is not distinctive in Korean and deletion of the Lar node entails deletion of [sg] and [cg].

2 I thank an anonymous reviewer for reminding me of positional markedness characteristics in coda neutralization, though all potential errors in the analysis are mine.

[lar]/[+cont]/[-ant] resist deletion in onset whereas the same features are susceptible to deletion in coda.

The two sets of constraints in (2) explain the loss of underlying [lar]/[+cont]/[-ant] in coda and the maintenance of the same features in onset.

(3) a. /nac/   nat   'day'
  b. /nac-e/   nac-e   'day-during'

| /nac/ [-ant]	NoCoda [-ant]	MAX ONSET [-ant]	/nac-e/ [-ant]	NoCoda [-ant]	MAX ONSET [-ant]
nac. [-ant]	*!		☞ na.c-e [-ant]		
☞ nat. [+ant]			na.t-e [+ant]		*!

(4) a. /nas/   nat   'a scythe'
  b. /nas-il/   nas-il   'a scythe-Acc'

/nas/ [+cont]	NoCoda [+cont]	MAX ONSET [+cont]	/nas-il/ [+cont]	NoCoda [+cont]	MAX ONSET [+cont]
nas. [+cont]	*!		☞ na.s-il [+cont]		
☞ nat. [-cont]			na.t-il [-cont]		*!

Smolensky 1993, Smolensky & Prince 1993, and Lombardi 1997 argue independently that all unmarked features or nodes including the Cor node should be fully specified. In this paper, we assume that all available features are specified underlyingly. Therefore, post-alveolar /c/ is represented as having the Cor node with a [-ant] dependent (Hume 1992, Clements 1991, Chomsky & Halle 1968). On the other hand, we assume that other Korean coronals (/t, s, n/) are represented with the
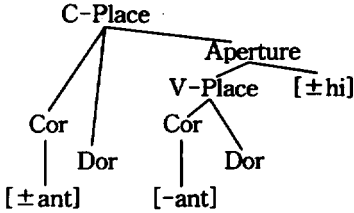
Cor node specified for [+ant] below.

(5) Assumed representation for /c, t, s, n/
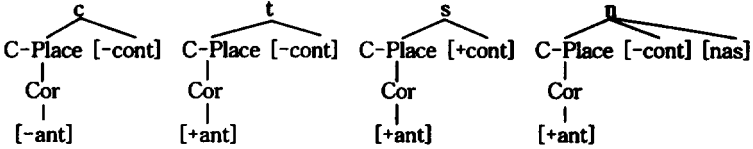
Finally, we also assume the following feature geometry, adopted from Clements & Hume 1995 and Hume 1992:

(6) Feature Geometry

In this paper, we are going to explain how [-cont] and [+ant] surface in coda neutralization (i.e. /s/->[t] and /c/->[t]). Before we analyze the appearance of unmarked features on the surface in coda neutralization, we refer to the redundancy implication in Itô, Mester & Padgett 1995, first.

2. Redundancy Implication in Itô, Mester & Padgett 1995

Itô, Mester & Padgett 1995 (hereafter, IMP) implement the two notions Licensing and Redundancy in OT to explain Voicing Assimilation in a sequence of a nasal C and a voiceless obstruent in Yamato Japanese:

(7) Observation: a nasal must share [voice] with a following consonant
        (IMP)
    a. /yom-te/   yon-de   'reading'
    b. /ʃin-te/   ʃin-de   'dying'
    c. tombo   'dragonfly'   *tompo
    d. ʃindo-i   'tired'   *ʃinto-i

Note that [voice] in a nasal consonant is a redundant feature since a nasal consonant redundantly implies [voice]. However, the redundant feature [voice] of a nasal affects the voicing of a following obstruent. From the observation that a nasal must share [voice] with a following consonant, IMP propose the following LICENSE[voice] and NasVoi constraints which appeal to Licensing and Redundancy, respectively:

(8) a. LICENSE[voice]: [voice] is licensed when linked to an
                obstruent.
    b. NasVoi: [nasal] ⊃ [voice]
                ([nasal] implies [voice] redundantly.)
    c. Constraint Ranking: LICENSE[voice] >> NasVoi
    d. Tableaux

	LICENSE[voice]	NasVoi
☞ kami [0voice]		
kami [voice]	*!	
tompo [0voice]		*!
tompo [voice]	*!	
☞ tombo [voice]		

In the first tableau above, the second candidate violates high ranked LICENSE[voice]. On the other hand, the first candidate violates low
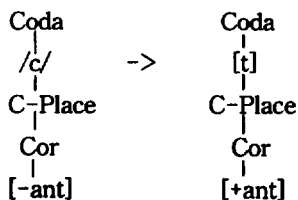
ranked NasVoi. As a result, the first candidate is optimal. In the second tableau, the last candidate does not violate any constraint and is optimal. The ranking LICENSE[voice]>>NasVoi chooses the optimal candidate in which a nasal and a following obstruent share [voice].

In later sections, we are going to introduce a new implication, default implication in OT, which is similar in nature to redundancy implication in IMP.

3. Default nature of [+ant] in Coda Neutralization

We observe in coda neutralization that [+ant] is a default feature of a coronal consonant. [+ant] is an unmarked feature of a coronal consonant. When [-ant] is deleted in coda neutralization (i.e. /c/ -> [t] as in /cəc/ [cət] 'milk'), [+ant] is inserted by default.

(9) Deletion of [-ant] and insertion of [+ant] in coda neutralization

```
     Coda              Coda
      |                 |
     /c/      ->       [t]
      |                 |
   C-Place           C-Place
      |                 |
     Cor               Cor
      |                 |
   [-ant]             [+ant]
```

Since we assume that all unmarked features are specified, this assumption entails the following constraint, which says that a coronal consonant should be specified for [ant]:
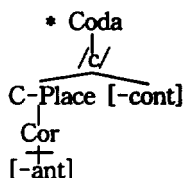
(10) NoEmpty[ant]

A coronal consonant should be specified for [ant]

```
        * C
       ___/
  C-Place
      |
    Cor
      |
   [0ant]
```

Hence, the following case in which [−ant] is delinked from the Cor node in coda neutralization, violates NoEmpty[ant]. This is because a coronal must be specified for either [+ant] or [−ant] by assumption:

(11) /c/ −> [t] in coda neutralization

     * Coda
      /c̶/
   C-Place [−cont]
   Cor
   [−ant]

Since we assume that unmarked features are specified, the case above should be strictly disallowed on the surface by assumption. As a result, we will assume that NoEmpty[ant] is undominated.

Undominated NoEmpty[ant] is the by-product of the basic assumption that all features are fully specified. And as we will see, it does not play any particular role in candidate evaluation. It is also possible to assume instead that NoEmpty[ant] is part of GEN, since a coronal consonant is never allowed on the surface by assumption. In this approach, since NoEmpty[ant] is a property of GEN, any coronal consonant not specified for [ant] is not generated at all as a candidate by GEN. In this paper, however, we will stick to the former approach that NoEmpty[ant] is undominated, only for clear description of our analysis. Note, however, that the latter approach that NoEmpty[ant] is part of GEN, does not affect our analysis[3].

We further propose that [+ant] is defaulted to a coronal consonant:
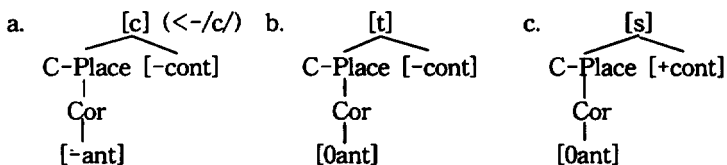
(12) Default[+ant]

   C-Place/Cor ⊃ [+ant]
   (C-Place/Cor implies [+ant] by default or a coronal consonant inherits [+ant] by default.)

Default[+ant] forces a coronal consonant to have [+ant]. Hence, a violation mark is incurred when a coronal consonant is not specified for [+ant] under the Cor node. Default[+ant] is evaluated in the following way:

(13) Violation incurred for Default[+ant]

a.   [c] (<-/c/)   b.   [t]   c.   [s]

C-Place [-cont]   C-Place [-cont]   C-Place [+cont]
   | | |
  Cor   Cor   Cor
   | | |
 [-ant]   [0ant]   [0ant]

Both (13b) and (13c) violate Default[+ant] due to lack of [+ant]. (13a) is the representation for [c] in onset (i.e. /ca/ -> [ca] 'ruler') and violates Default[+ant] since it is specified for [-ant] and does not have [+ant]. We propose the following constraint ranking:

(14) a. Constraint Ranking

    NoCoda[-ant], NoEmpty[ant], MAXONSET[-ant]
    >> Default[+ant]

(15) a. /ca/   [ca]   'ruler'

    b. /ton/   [ton]   'money'

/ca/ [-ant]	NoEmpty [ant]	MAX ONSET [-ant]	Default [+ant]	/ton/ [+ant]	NoEmpty [ant]	MAX ONSET [-ant]	Default [+ant]
☞ ca [-ant]			▓	☞ ton [+ant]			
ta [+ant]		*!	▓	con [-ant]			*!
ta [0ant]	*!	▓	▓	ton [0ant]	*!	▓	▓

In the tableaux above, we are considering two different cases in which either [-ant] or [+ant] is specified underlyingly. In the first tableau, the

first candidate violates low ranked Default[+ant] whereas the other candidates violate either high ranked NoEmpty[ant] or MAXONSET[-ant]. As a result, the first candidate in which [-ant] surfaces is optimal. In the second tableau, the first candidate does not violate any constraint. The second candidate violates Default[+ant] due to lack of [+ant]. Note that Default[+ant] forces a coronal consonant to have [+ant] specified under the Cor node. The third candidate violates NoEmpty[ant] since the Cor node is underspecified for [ant]. Hence, the proposed ranking correctly predicts that the first candidate is optimal.

When we consider a case in which /c/ gets neutralized to [t] in coda by neutralization, we need to consider another undominated constraint NoCoda[-ant]. In the tableaux below, we include another type of coda neutralization, /tʰ/ to [t] for comparison. Note that deletion of the Lar node is ignored in tableaux below for simplicity:

(16) a. /cəc/   [cət]   'milk'

　　 b./patʰ/   [pat]   'field'

/cəc/ [-ant]	NoCoda [-ant]	No-Empty [ant]	MAX ONSET [-ant]	Default [+ant]	/patʰ/ [+ant]	NoCoda [-ant]	No-Empty [ant]	MAX ONSET [-ant]	Default [+ant]
cəc. [-ant]	*!				☞ pat. [+ant]				
☞ cət. [+ant]					pac. [-ant]	*!			
cət. [0ant]		*!			pat. [0ant]		*!		

In the first tableau, the first candidate in which [-ant] is retained in coda, violates undominated NoCoda[-ant]. The third candidate violates undominated NoEmpty[ant] since the Cor node in coda is underspecified for [ant]. The second candidate does not violate any constraint and therefore is optimal. In the second tableau in which laryngeal neutralization is involved, the first candidate violates no constraint. The second candidate fatally violates NoCoda[-ant] since [-ant] is retained in

coda. The third candidate receives a fatal violation mark for NoEmpty[ant] due to underspecification of [ant] under the Cor node. Hence, the first candidate is optimal.

Let us consider another case in which a morpheme-final obstruent is realized in onset:

(17) a. /cəc-il/   [cəc-il]   'milk-Acc'
     b. /pat^h-e/   [pat^h-e]   'field-at'

/cəc-il/ [-ant]	NoCoda [-ant]	No-Empty [ant]	MAX ONSET [-ant]	Default [+ant]	/pat^h-e/ [+ant]	NoCoda [-ant]	No-Empty [ant]	MAX ONSET [-ant]	Default [+ant]
☞ cə.c-il [-ant]					☞pa.t^h-e [+ant]				
cə.t-il [+ant]			*!		pa.c^h-e [-ant]				*!
cə.t-il [0ant]		*!			pa.t^h-e [0ant]		*!		

In the first tableau, the second candidate fatally violates MAXONSET[-ant] whereas the first violates lower ranked Default[+ant]. The third candidate is out due to fatal violation of undominated NoEmpty[ant] along with violation of MAXONSET[-ant] and Default[+ant]. Hence, the first candidate is optimal. In the second tableau, only the first candidate does not violate any constraint and is optimal. The second and third candidates fatally violate Default[+ant] and NoEmpty[ant], respectively.

So far we have proposed the following constraint ranking in this section:

(18) Constraint Ranking
      NoCoda[-ant], NoEmpty[ant], MAXONSET[-ant]
      >> Default[+ant]

4. Default nature of [-cont] in Coda Neutralization

Since all unmarked features are fully specified by assumption, all consonants should be specified for either [-cont] or [+cont]. We propose the following undominated constraint which prevents any consonant which is underspecified for [cont] on the surface:
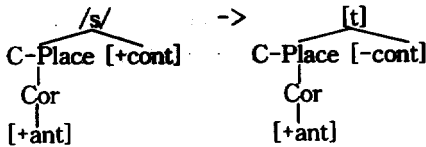
(19) NoEmpty[cont]

All consonant should be specified for [cont]

    * C
    ⌒
C-Place [0cont]
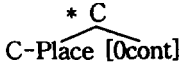
In coda neutralization, /s/ in coda gets neutralized to [t] (i.e. /os/ [ot] 'clothes'). In this case, both deletion of [+cont] and insertion of [-cont] are involved.

(20) Deletion of [+cont] and insertion of [-cont] in coda neutralization

a. os   ot   'clothes'
b. cis-ta   cit-t'a   'build-Suffix'

         /s/   ->   [t]
       ⌒   ⌒
  C-Place [+cont]   C-Place [-cont]
       | |
      Cor   Cor
       | |
     [+ant]   [+ant]

The insertion of unmarked [-cont] in coda neutralization strongly suggests that [-cont] is a default feature of a consonant in Korean. Namely, all consonants should be specified for either [-cont] or [+cont], and [-cont] is a default feature for a consonant. We propose the following default implication:
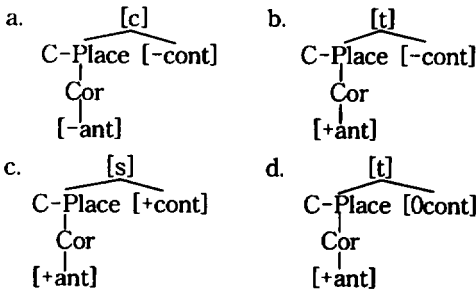
(21) Default[-cont]

      C-Place ⊃ [-cont]

      (C-Place implies [-cont] by default or a consonant inherits [-cont] by default.)

Default[-cont] forces a consonant to have [-cont]. Hence, a violation mark is incurred when a consonant is not specified for [-cont]. Default[-cont] is evaluated in the following way:

(22) Evaluation of Default[-cont]

a.
```
        [c]
     ╱‾‾‾‾╲
 C-Place [-cont]
    │
   Cor
    │
  [-ant]
```

b.
```
        [t]
     ╱‾‾‾‾╲
 C-Place [-cont]
    │
   Cor
    │
  [+ant]
```

c.
```
        [s]
     ╱‾‾‾‾╲
 C-Place [+cont]
    │
   Cor
    │
  [+ant]
```

d.
```
        [t]
     ╱‾‾‾‾╲
 C-Place [0cont]
    │
   Cor
    │
  [+ant]
```

(22a) and (22b) do not violate Default[-cont] since they are specified for [-cont]. (22c) and (22d), on the other hand, violate Default[-cont] since they do not have [-cont]. On the other hand, when we consider the [s] in onset from the input /s/ (i.e. /so/ [so] 'cow'), it does not violate MAXONSET[+cont] but violates Default[-cont]. This suggests the ranking MAXONSET[+cont]>>Default[-cont]. Therefore, we propose the following constraint ranking:

(23) Constraint Ranking

      NoCoda[+cont], NoEmpty[cont], MAXONSET[+cont]

      >> Default[-cont]

Given the constraint ranking in (23), we can explain why /s/ in onset is realized as [s] (i.e. lack of coda neutralization). Note below that We

additionally provide a case in which [-cont] is underlyingly specified, for comparison:

(24) a. /so/   [so]   'cow'

    b. /ton/   [ton]   'money'

/so/ [+cont]	NoCoda [+cont]	No-Empty [cont]	MAX ONSET [+cont]	Default [-cont]	/ton/ [-cont]	NoCoda [+cont]	No-Empty [cont]	MAX ONSET [+cont]	Default [-cont]
☞ so [+cont]					☞ ton [-cont]				
to [-cont]			*!		son [+cont]				*!
to [0cont]		*!			ton [0cont]		*!		

In the first tableau, the first candidate violates low ranked Default[-cont] since consonant [s] is not specified for [-cont]. The second candidate receives a fatal violation mark for higher ranked MAXONSET[+cont] due to deletion of [+cont]. The third candidate violates NoEmpty[cont] since [t] is unspecified for [cont]. As a result, the first candidate is optimal. In the second tableau, only the first candidate does not violate any constraint and is optimal. The second candidate receives a fatal violation mark for Default[-cont] since [s] does not have [-cont].

Now let us consider a case of coda neutralization in which both deletion of [+cont] and insertion of [-cont] are involved. The proposed constraint ranking also explains the default characteristic of [-cont] in coda neutralization.   In coda neutralization, /s/, which is specified for [+cont], is realized as [t] in coda, which is specified for [-cont].

(25) a. /os/   [ot]   'clothes'

     b. /patʰ/   [pat]   'field'

/os/ [+cont]	NoCoda [+cont]	No-Empty [cont]	MAX ONSET [+cont]	Default [-cont]	/patʰ/ [-cont]	NoCoda [+cont]	No-Empty [cont]	MAX ONSET [+cont]	Default [-cont]
os. [+cont]	*!				☞ pat. [-cont]				
☞ ot. [-cont]					pas. [+cont]	*!			
ot. [0cont]		*!			pat. [0cont]			*!	

In the first tableau above, the first candidate fatally violates undominated NoCoda[+cont]. It also violates Default[-cont] since consonant [s] does not have [-cont]. The third candidate violates undominated NoEmpty[cont]. The optimal second candidate does not violate any constraint. Hence, the second candidate is optimal. In the second tableau, only the first candidate does not violate any constraint and therefore is optimal.

The following demonstrates a case in which a stem-final [+cont] consonant is followed by a vowel-initial Suffix:

(26) a. /os–il/   [osi]   'clothes-Nom'

     b. /patʰ–e/   [patʰe]   'field-at'⁴

/os–il/ [+cont]	NoCoda [+cont]	No-Empty [cont]	MAX ONSET [+cont]	Default [-cont]	/patʰ–e/ [-cont]	NoCoda [+cont]	No-Empty [cont]	MAX ONSET [+cont]	Default [-cont]
☞ o.s–il [+cont]					☞ pa.tʰ–e [-cont]				
o.t–il [-cont]			*!		pa.s–e [+cont]				*!
o.t–il [0cont]		*!			pa.ʧʰ–e [0cont]		*!		

In the first tableau, the second candidate which loses [+cont] feature receives a fatal violation mark for MAXONSET[+cont]. The third candidate fatally violates undominated NoEmpty[cont] along with violation of MAXONSET[+cont] and Default[-cont]. As a result, the first candidate with a violation mark for low ranked Default[-cont] is optimal. In the second tableau, the first candidate does not violate any constraint. The second candidate receives a fatal violation mark for Default[-cont] due to lack of [-cont] in [s]. The third candidate is crossed out due to fatal violation of NoEmpty[cont] since [tʰ] is unspecified for [cont]. Hence, the first candidate is predicted to be optimal.

So far, we propose the following ranking in this section:

(27) Constraint Ranking
        NoCoda[+cont], NoEmpty[cont], MAXONSET[+cont]
        >> Default[-cont]

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4 Actually [pase] is an optional output form of /patʰ–e/ and we are not going to analyze this optimal form in this paper. Leaving the analysis of the optional output form for further study, we are going to assume tentatively in this paper that [pase] is realized from a different underlying form.

Before we conclude this section, we will show full evaluation tableaux in which [-cont] and [+ant] are defaulted to a neutralizing coda segment at the same time. We are assuming the following constraints, as proposed so far:

(28) Constraint Ranking
NoCoda[+cont]/[-ant], NoEmpty[cont], NoEmpty[ant],
MAXONSET[+cont], MAXONSET[-ant]
>> Default[-cont], Default[+ant]

(29) a. /os/   [ot]   'clothes'
b. /os-il/   [osil]   'clothes-Acc'
c. /so/   [so]   'cow'

	NoCoda [+cont]	No-Empty [cont]	No-Empty [ant]	MAX ONSET [+cont]	MAX ONSET [-ant]	Default [-cont]	Default [+ant]
os. ‿ [+cont][+ant]	*!						
ot ‿ [0cont][+ant]		*!					
☞ ot. ‿ [-cont][+ant]							
☞ o.s‿il [+cont][+ant]							
o.s‿il [+cont][0ant]			*!				
o.t‿il [-cont][+ant]				*!			
☞ .so ‿ [+cont][+ant]							
.to ‿ [0cont][+ant]		*!					
.to ‿ [-cont][+ant]				*!			

5. Conclusion

So far we have proposed that insertion of unmarked features [+ant] and [-cont] in coda neutralization can be explained by default implication which says that [+ant] is a default feature of a coronal consonant and [-cont] a default feature of a consonant.

Hence, we have demonstrated that insertion of default features can be implemented in OT when we assume full-specification hypothesis (Smolensky 1993, Prince & Smolensky 1993, Lombardi 1997). Since we assume that all features are specified, default implication plays an important role in OT.

Default implication is similar in nature to redundancy implication in IMP. However, the assumption the two implications are based on are different in that default implication crucially depends on the full-feature specification hypothesis whereas redundancy implication, on the underspecification hypothesis (Archangeli 1984 and others). If the full-feature specification hypothesis is correct, Default implication may have to replace redundancy implication in IMP. This is because redundancy implication is incompatible with the full-feature specification hypothesis.

Default implication is powerful enough to describe insertion of an unmarked feature without designating an unmarked feature as a default feature for some segment. For example, [+ant] is less marked than [-ant], since the former is inserted in the coda-neutralized coronal [t] (i.e. /cəc/ [cət] 'milk'). However, we need not stipulate that [+ant] is a default feature. Instead, we just say that both [+ant] and [-ant] are potential default features for a coronal consonant. However, [+ant] is more harmonic than [-ant] for a coronal consonant when default insertion is concerned. As a result, we may just say that Default[+ant] is ranked higher than Default[-ant]:

(30) Constraint Ranking
    Default[+ant] >> Default[-ant]

Hence, the insertion of [+ant] satisfies Default[+ant] at the expense of violating Default[-ant] for the coda-neutralized [t].

In the same vein, we may also say that both [-cont] and [+cont] are potential default features for a consonant. However, insertion of [-cont] is more harmonic than that of [+cont] in the coda-neutralized [t] (i.e. /os/ [ot] 'clothes'). Then, we may say that Default[-cont] is ranked higher than Default[+cont], as [-cont] is more harmonic than [+cont] for a coda-neutralized [t]:

   (31) Constraint Ranking
          Default[-cont] >> Default[+cont]

References

Archangeli, D. 1984. *Underspecification in Yawelmani phonology and morphology*, PhD Dissertation, MIT. Published by Garland Press, New York, 1986.

Beckman, J. 1998 *Positional Faithfulness*. PhD Dissertation, University of Massachusetts, Amherst.

Benua, L. 1995. "Identity Effects in Morphological Truncation," *UMOP* 18, 77-136.

Borowsky, T. 1989. "Structure preservation and the syllable coda in English," *NLLT* 7, 145-166.

Chomsky, N. and M. Halle. 1968. *The sound pattern of English*. New York: Harper & Row.

Clements, G. N. 1985. "The geometry of phonological features," *Phonology Yearbook* 2, 225-252.

Clements, G. N. 1989. "A unified set of features for consonants and vowels," ms., Cornell University.

Clements, G. N. 1991. "Place of articulation in consonants and vowels: A unified theory," *Working Papers of the Cornell Phonetics Laboratory* 5, 77-123. Cornell University.

Clements, G. N. and E. Hume. 1995. "The internal Organization of Segments," in J. A. Goldsmith, ed., *The Handbook of Phonological Theory*, 245-306.

Hong, S. 1996. "Coda Neutralization in Korean: OT Approach," in *Proceedings of*

the 1st Seoul International Conference On Phonetic Sciences, Oct. 24-26, 1996, 123-128.

Hong, S. 1997a. "Overapplication of Coda Neutralization," in *Proceedings of the 4th Seoul International Conference Of Linguistics*, Aug. 11-15, 1997, 583-592. To appear in *Linguistics in the Morning Calm IV*.

Hong, S. 1997b. "Palatalization and Umlaut in Korean," *UPENN Working Papers in Linguistics* 4.3, 87-132. University of Pennsylvania.

Hong, S. 1998a. "Licensing and Default Implication of Korean [lat] in OT," *Language Research* 34.2, 419-444. Seoul National University.

Hong, S. 1998b. "Licensing and Redundancy: [s]-Onset Neutralization," *Linguistics* 6.2, 263-287. The Linguistic Association of Korea.

Hong, S. 1999. "Lexical underspecification and defaulted [+cont] in Korean foreign borrowings," ms., Inha University.

Hume, E. 1990. "Front vowels, palatal consonants, and the rule of umlaut in Korean," *NELS* 20, 230-243.

Hume, E. 1992. *Front vowels, palatal consonants and their interaction in nonlinear phonology*, PhD Dissertation, Cornell University.

Itô J. 1986. *Syllable Theory in Prosodic Phonology*, PhD Dissertation, University of Massachusetts, Amherst.

Itô J., A. Mester and J. Padgett. 1995. "Licensing and Underspecification Theory," *Linguistic Inquiry* 26, 571-614.

Kim, K.-H. 1987. *The Phonological Representation of Distinctive Features: Korean Consonantal Phonology*, PhD Dissertation, University of Iowa.

Kim-Renaud, Y.-K. 1974/1991. *Korean Consonantal Phonology*, PhD Dissertation, University of Hawaii.

Lombardi, L. 1995. "Laryngeal Neutralization and Syllable Wellformedness," *NLLT* 13, 39-74.

Lombardi, L. 1997. "Coronal epenthesis and markedness." Paper presented at Hopkins Optimality.

McCarthy, J. and A. Prince. 1993. "Prosodic Phonology I: Constraint Interaction and Satisfaction," ms., University of Massachusetts, Amherst and Rutgers University.

McCarthy, J. and A. Prince. 1995. "Faithfulness and Reduplicative Identity," *UMOP* 18, 289-384.

Prince, A. and P. Smolensky. 1993. "Optimality Theory: Constraint interaction in generative grammar," ms., Rutgers University.

Smolensky, P. 1993. "Harmony, markedness and phonological activity." Paper

presented at Rutgers Optimality Workshop and revised handout.

Zubritskaya, E. L. 1995. *The Categorical and Variable Phonology of Russian*, PhD Dissertation, University of Pennsylvania.

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