Remarks on Markedness

Paul Kiparsky
Stanford University
TREND 2, Jan. 22 1994

Featural Markedness

(1) How should a phonological theory based on defeasible ranked constraints reflect the asymmetry between unmarked and marked feature values (e.g. CORONAL vs. LABIAL, DORSAL, or [–LOW] vs. [+LOW])?

(2) Prince & Smolensky (1993), Smolensky (ROW 1993): markedness = visibility.

a. Assume that every feature value F is excluded by a constraint *F. Marked feature values are visible because the constraints that exclude them universally dominate the constraints that exclude the corresponding unmarked feature value: universal constraint domination relation *MF $\gg$ *UF. E.g. *LABIAL $\gg$ *CORONAL.

b. The observed markedness effects follow from the interaction of *MF $\gg$ *UF with other constraints.

c. Underspecification explained away: unmarked feature values are those which are subject only to low-ranked constraints. It makes no difference whether they are specified in lexical representations.

(3) Epenthesis of unmarked segments (in Radical Underspecification, epenthesis of empty segments with default).

a. $\emptyset \rightarrow$ *t*: e.g. Axininca Campa (McCarthy and Prince 1993), French (Tranel), perhaps Finnish /maa+a/ $\rightarrow$ *maata* (Anttila, in prep.).

b. $\emptyset \rightarrow$ *i*: e.g. Manam /di+ezul+ʔáma/ $\rightarrow$ *diezuliʔáma* (Lichtenberk 1983), Finnish *pikkelsi, punssi* "pickles, punch".

(4)

	Input: /a/	*LAB	ONS	FILL^{PL}	*COR
1a.	☞ ta			*	*
1b.	pa	*!		*	
1c.	a		*!		

(5) Another implementation of the basic idea in [2], to be argued for here:

a. Constraints cannot specify unmarked feature values.

b. For EVERY constraint that refers to a phonological category, there is an otherwise identical constraint that refers specifically to the marked member of that category. E.g. FILL^{LAB} and FILL^{PLACE}, PARSE^{LAB} and PARSE^{PLACE}, SPREAD^{LAB} and SPREAD^{PLACE} ...

c. By Pāṇini's Theorem (S&P 1993), a specific constraint is active only if it precedes the corresponding general constraint.

d. Constraints such as *LABIAL, *CORONAL are not required.

(6)

Input: /a/	ONS	FILL$^{\mathrm{LAB}}$	FILL$^{\mathrm{PLACE}}$
1a. ☞ ta			*
1b. pa		*	*
1c. a	*!		

Note that the mutual ranking of FILL$^{\mathrm{LAB}}$ and FILL$^{\mathrm{PLACE}}$ doesn't matter.

Assimilation

(7) Unmarked segments assimilate to unmarked segments: both feature values may spread, if only one feature value spreads, it is the marked one.

a. [αvoice] (e.g. Russian), [+voice] (e.g. Ukrainian), but not [–voice] (Cho 1990).

b. [αdistributed] (e.g. Chumash, Poser 1982), [+distributed] (e.g. Kinyarwanda, A. Kimenyi), but not [–distributed].

c. Harmony: [+ATR], [+Round], [+Nasal].

In Radical Underspecification, this asymmetry is explained by the possibility of ordering assimilation before the assignment of complement feature values, Cho 1990. How does it come out in OT?

(8) Assume assimilation is enforced by a constraint SPREAD which prohibits multiple specifications of a feature in some domain (a sort of generalized OCP):

SPREAD: *Place Place
| |
F G

(9) The constraints *PL/LAB, *PL/COR wrongly predict that unmarked features will spread preferentially:

Input: C C | | t p	SPREAD	*PL/LAB	*PL/COR
1a. C C | | t p	*!		
1b. C C | <t>p		*!	
1c. ☞ C C | t <p>			*

(10) The constraints PARSE$^{\text{LAB}}$, PARSE$^{\text{PLACE}}$ yield the right result:

<table>
<tr><th>Input: C C
| |
t p</th><th>SPREAD</th><th>PARSE$^{\text{LAB}}$</th><th>PARSE$^{\text{PLACE}}$</th></tr>
<tr><td>1a. C C
| |
t p</td><td>*!</td><td></td><td></td></tr>
<tr><td>1b. ☞ C C
|
<t>p</td><td></td><td></td><td>*</td></tr>
<tr><td>1c. C C
|
t <p></td><td></td><td>*!</td><td></td></tr>
</table>

Deletion

(11) One deletion pattern is that marked elements drop in preference to unmarked elements. E.g. Lardil drops final labials and velars, but retains coronals (K. Hale, K. Wilkinson, Prince & Smolensky 1993). Similarly, Finnish -*k* was lost but -*t* was retained:

a. **estek* → *este* "barrier"

b. **kevät* = *kevät* "spring"

(12) An example of deletion of marked vowels: Estonian *a* is regularly deleted medially after a heavy syllable in the verb morphology. The rule only apples to *a* (cf. b) and only after heavy syllables (cf. c, d).

a. /karta+ma/ → *kartma* "to avoid"
/laula+ma/ → *laulma* "to sing"
/saata+ma/ → *saatma* "to send"
/anda+ma/ → *andma* "to give"
/osta+ma/ → *ostma* "to buy"

b. /õppi+ma/ → *õppima* "to learn"
/selgi+ma/ → *selgima* "to become clear"
/kiiku+ma/ → *kiikuma* "to swing"
/hauku+ma/ → *haukuma* "to bark"
/tundu+ma/ → *tunduma* "to feel" (intr.)

c. /jaga+ma/ → *jagama* "to divide"
/lisa+ma/ → *lisama* "to increase"

d. /küsi+ma/ → *küsima* "to ask"
/ladu+ma/ → *laduma* "to stack"

(13) Question 1: in Lardil and Finnish, why not $k \rightarrow t$ instead of $k \rightarrow \emptyset$ (in fact, South Ostrobothnian dialects of Finnish do exactly that, e.g. *estet* “barrier”)? And in Estonian, why not $a \rightarrow i$ instead of $a \rightarrow \emptyset$? Because *FILL precludes epenthesis of the unmarked vowel and consonant melodies? No: *i*-epenthesis is productive in Estonian. There are also arguments for *t*- epenthesis in Finnish phonology (Anttila, in progress). Also, in Finnish the coronal melody is supplied for neutralized nasals:

(14)
a. /ytim/ → *ydin* “nucleus”
b. /höyhen/ → *höyhen* “feather”

(15) Question 2: what about the pattern where it is the *unmarked* elements that preferentially delete?

a. English -*t*, -*d* deletion.
b. Old English High Vowel Deletion (most recently Sohn, this workshop). Similar left context as the Estonian rule [12], but applies in final syllables.
c. Tulu high vowels *(i, ɨ, u)* delete optionally in medial open syllables (Bhatt 1971):

/posunu/ → *posnu* “it burnt” /pa:siyE/ → *pasyE* “I caught” /ma:sɨnɨ/ → *ma:snɨ* “it poured”

(16)
a. PARSE$^{\mathrm{LAB}}$, PARSE$^{\mathrm{DORS}}$ …
b. PARSE$^{\mathrm{PLACE}}$
c. PARSE C$^{\mathrm{NAS}}$, PARSE C$^{\mathrm{LAB}}$ …
d. PARSE C
e. CODA-NEUTRALIZATION$^{\mathrm{M}}$:

$$\begin{array}{c} {*}\mathrm{C}]_\sigma \\ | \\ [\mathrm{LAB}] \end{array}, \qquad \begin{array}{c} {*}\mathrm{C}]_\sigma \\ | \\ [\mathrm{DORS}] \end{array}$$

f. CODA-NEUTRALIZATION:

$$\begin{array}{c} {*}\mathrm{C}]_\sigma \\ | \\ [\mathrm{PLACE}] \end{array}$$

(Properly, the formulation should be that weak positions can’t license the feature, à la Itô, Mester, Padgett.)

(17)

puhek, kevät, ytim	CD-NTR$^{\mathrm{M}}$	PRS C$^{\mathrm{NAS}}$	PRS$^{\mathrm{PL}}$	PRS-C
1a. C – k	*!			
1b. C – <k>			*!	
1c. ☞ <C> – k				*
2a. ☞ C – t				
2b. C – <t>			*!	
2c. <C> – t				*!
3a. C – m	*!			
3b. ☞ C – <m>			*	
3c. <C> – m		*!		*

(18) The weakening patterns for vowels (unstressed, in open syllables) and consonants (coda position) are similar:

M, U $\rightarrow \emptyset$	V $\rightarrow \emptyset$	(Yokuts, Icelandic, Piro)	C $\rightarrow \emptyset$	(Maori)
M $\rightarrow$ U	$a \rightarrow i$	(Latin)	$m \rightarrow n$	(Finnish)
U $\rightarrow \emptyset$	$i, u \rightarrow \emptyset$	(OE, Slavic, Japanese)	$t \rightarrow \emptyset$	(English)
M $\rightarrow \emptyset$	$a \rightarrow \emptyset$	(Estonian)	$k, p \rightarrow \emptyset$	(Lardil, Finnish)

(19)

	A1	A2	B1	B2	C1	C2
Input: V | LO	$*V]_\sigma$ | LO	$*V]_\sigma$ | PL	Parse V | LO	Parse V | PL	Parse$^{\mathrm{LO}}$	Parse$^{\mathrm{PL}}$
1a. V | LO	*	*				
1b. V | ⟨LO⟩					*	*
1c. ⟨V⟩ | LO			*	*		
2a. V | HI		*				
2b. V | ⟨HI⟩						*
2c. ⟨V⟩ | HI				*		

(20)
a. M, U $\rightarrow \emptyset$: A, C $\gg$ B
b. M $\rightarrow$ U: A1, B $\gg$ C $\gg$ A2
c. U $\rightarrow \emptyset$: B1, C $\gg$ A $\gg$ B2
d. M $\rightarrow \emptyset$: A1, B $\gg$ C $\gg$ A2

Apparent problems

(21) McCarthy's account of the chain shift $i \rightarrow \emptyset$, $a \rightarrow i$ in Arabic (ROW 1993) is forced to posit the ranking PARSE$^{\mathrm{HIGH}}$ $\gg$ PARSE$^{\mathrm{LOW}}$. Having a constraint on an unmarked feature ranked above the constraint on the corresponding marked feature is not possible on the present proposal, since the constraints are PARSE$^{\mathrm{LOW}}$ (the marked feature) and PARSE$^{\mathrm{PLACE}}$, where PARSE$^{\mathrm{LOW}}$ must precede PARSE$^{\mathrm{PLACE}}$ to be visible (by "Pāṇini's Theorem").
The chain shift discussed by McCarthy is however derivable from the constraints in [19] by the ranking A, B1 $\gg$ C $\gg$ B2.

(22) The only other possible outcome from the system [19] is no change, which results from the constraint ranking B, C $\gg$ A. The outcome U $\rightarrow$ M is excluded.

(23) A second analysis which apparently contravenes the present proposal is the analysis of syllabification in P&S 1993, which assumes that the sonority hierarchy

is accessed from the top end by one constraint family, which prohibits sonorous segments from syllable margins, and from the bottom end by another constraint family, which prohibits non-sonorous segments from syllable peaks.

a. *M/a, *M/i . . .

b. *P/t, *P/s . . .

(24) However, this idea can be recast in terms of two constraint families which both access the sonority hierarchy from the top (here μ= "moraic"), and interact with [25], [26].

a. a. [+low] $\supset$ μ
   b. [−cons] $\supset$ μ
   c. [+voc] $\supset$ μ
   d. . . .

b. a. μ$\supset$ [+low]
   b. μ$\supset$ [−cons]
   c. μ$\supset$ [+voc]
   d. . . .

(25) Onset Constraint (D. Zec):

*μ
|
x $\prec$ y

A segment can't be moraic if it's followed by a more sonorous segment.

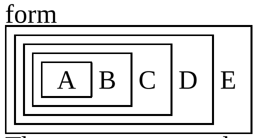
(26) Rhyme Constraint:

a. *[μμμ]$_\sigma$

b. *[μμ]$_\sigma$

(27) Get syllable typology by interspersing [25] and [26] among the sonority constraints in the dominance hierarchy. E.g. Spanish [24-1c] $\gg$ [25] $\gg$ [24-1d]. English [24-1b] $\gg$ [25] $\gg$ [24-1c].

(28) Conjecture: all linguistic hierarchies are induced by constraint families of the form



They are consequently accessible only from the "restricted end". I.e. AB, ABC. . . , are natural classes, whereas DE, CDE. . . are not natural classes.
Morphosyntactic examples: the hierarchy of binding domains, the animacy hierarchy for case marking.