Markedness Exists

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1. Aims & Issues

(1)   *Aim*
        The aim of this talk is to argue that markedness exists.
        (a) It refers to a set of i-language mechanisms in phonology and syntax.
        (b) The mechanisms produce asymmetries in natural language

(2)   *What is markedness?*
        'Markedness' is an informal term that refers to observations about the outputs, undergoers, and triggers of some processes (Trubetzkoy 1939)
        • There are segments/features that are classed as 'marked' and some that are 'unmarked'
        (a) The output of processes is unmarked
        (b) If an unmarked element undergoes a process, so do the more marked ones.
        (c) If an unmarked element triggers a process, so do more marked ones. [more controversial]

(3)   *An example: outputs*
        (a) In codas, /p/ may become [ʔ] (e.g. Ulu Muar Malay), but /ʔ/ never becomes [p].
        (b) Therefore, [p] is more marked than [ʔ]
                • more precisely: some feature value of [p] is more marked than the corresponding value of [ʔ] in some hierarchy.
        (c) Similarly, /p/ may become [t] (e.g. Cantonese), but /t/ never becomes [p]; also /t/ may become [ʔ].
        (d) From (b) and (c): | labial 〉coronal 〉glottal |
        (e) From inspecting dorsals, we find the **PoA hierarchy**:
                | dorsal 〉labial 〉coronal 〉glottal |

(4)   *Current attitudes of the field*
        (a) Markedness is part of i-language
                SPE (ch.9), Underspecification Theory, Prince & Smolensky (1993) and almost all work in OT since then.
        (b) Markedness doesn't exist
                Hume & Tserdanelis (2002), Hume (2003), Vaux (2001)
        (c) Markedness exists, but isn't part of i-language
                Blevins (2004)

(5)   *Why be skeptical?*
        (a) *Lack of expected markedness*:
        Some phenomena traditionally believed to show markedness do not
                 e.g. undergoers of assimilation
        (b) *Ignoring markedness:*
        Some languages **ignore** markedness distinctions.
        (c) *Markedness Variation*:
        Languages **differ** as to what is the least marked segment

(6)   *Markedness exists, but we also need:*
        (a') Preservation of the Marked
        (b') Conflation
        (c') Hierarchy conflict

(7)   *Implications of the principles*
        • The proposals are a theory about where markedness asymmetries can and
        cannot appear.

2. Markedness reduction

(8)   *Consonant epenthesis*
        Putting assimilation and dissimilation aside:
        (a) epenthetic consonants are never labial or dorsal[1]
                 (i) They're almost always *glottal* [ʔ h]
                         (e.g. Mabalay Atayal – Lambert 1999)
        (b) the output of Place neutralization is never labial or dorsal
                 (i) It's almost always *glottal* (e.g. Standard Malay – see below)

(9)   *Markedness reduction*
        (a) *{dors}   "Incur a violation for each dorsal in the output."
        (b) *{dors,lab}   "Incur a violation for each dorsal or labial in the output."
        (c) *{dors,lab,cor}   etc.
        (d) *{dors,lab,cor,gl}

(10)   *Epenthesis*

/…a/	*{dors}	*{dors,lab}	*{dors,lab,cor}	*{dors,lab,cor,gl}
(a) …ak	*!	*	*	*
(b) …ap		*!	*	*
(c) …at			*!	*
☞ (d) …aʔ				*

        • There is no ranking of the constraints that will *disfavour* [ʔ]

        • Faithfulness constraints are irrelevant

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[1] Except for approximants, for incidental reasons.

(11)   *Before we move on*
       (a) I've asked your trust in my assertion that there are no cases of epenthetic labials and dorsals, and neutralization to labial or dorsal.
              • The generalizations is made from a survey of over 200 typologically diverse languages.
              • There are some putative counter-examples that turn out not to be relevant.
       (b) Coronals can be epenthetic too… but we'll deal with this in section 5.

3. Preservation of the Marked

(12)   **The issue**
       Sometimes only relatively *unmarked* elements are eliminated by a process…

(13)   *Yamphu coda PoA neutralization* (from Rutgers 1998)
              (a) /t/→[ʔ] in codas
              /næmːit/ →   [næmːiʔ] 'daughter-in-law' (c.f. [namːid-æʔ] {instrumental})
              /sitː-ma/ →   [siʔma] 'hit+{infinitive}' (c.f. [sitː-a] 'hit+{past}')
              (b) /p/ → [p] in codas
              [kʰap]   'language'
              [kep-ma]   'stick+{infinitive}'
              (c) /k/ → [k] in codas
              [æʔlik]   'bendy'
              [kʰaːk-ma]   'scrape one's throat + infinitive'
              (d) /ʔ/ → [ʔ] in codas
              [asiʔ]   'previously' (c.f. [asi.ʔ-em-ba] 'before')
              [jiːw-æʔ-mu]   'river-possessive-down' (c.f. [kaniŋ-æʔæ] 'we-poss.')

(14)   *Markedness reduction*

	/ʔit/	*{dors,lab,cor}	IDENT{PoA}
	(a) ʔit	*!	
☞	(b) ʔiʔ		*

(15)   *Preservation of the marked*
       (a) IDENT{dors} "If segment *s* is dorsal, then *s′* is dorsal"
       (b) IDENT{dors,lab} "If segment *s* is dorsal or labial, then *s* and *s′* have the same
                          PoA"
       (c) IDENT{dors,lab,cor} etc.
       (d) IDENT{dors,lab,cor,gl} etc.

(16)   *PoM in action*

/...ip/	IDENT{dors,lab}	*{dors,lab,cor}	IDENT{dors,lab,cor}
☞ (a) ...ip		*	
(b) …iʔ	*!		*

(17)

/soksæt/	IDENT{dors,lab}	*{dors,lab,cor}	IDENT{dors,lab,cor}
(a) soʔsæʔ	*!		* *
(b) soʔsæt	*!	*	*
(c) soksæt		* *!	
☞ (d) soksæʔ		*	*

(18)   *PoM preserves marked elements, and markedness reduction seeks to eliminate them, so:*
        <u>Coda stop/nasal inventories produced by PoA neutralization</u>

	dors	lab	cor	ʔ	
harmonically complete				✓	Kashaya (Buckley 1994), Kelantan Malay (Teoh 1988, Trigo 1988), Toba Batak (Hayes 1986)
			✓	✓	Chickasaw (Munro & Ulrich 1985)
		✓	✓	✓	Standard Malay (below)
	✓	✓	✓	✓	Pendau (Quick 2000§4.2.1)
			✓		Uradhi (Hale 1976, Crowley 1983)
		✓	✓		Formal Kiowa (Watkins 1984)
	✓	✓	✓		New Zealand English
gapped		✓		✓	Nganasan (Helimski 1998)
	✓			✓	Fuzhou (Yip 1982:646)
	✓	✓		✓	Yamphu, Cockney English (Sivertsen 1960)
	✓		✓	✓	Nambiquara (Kroeker 1972)
	✓		✓		Mordva (Zaicz 1998)

• All have alternations showing synchronic neutralisation
• i.e. *(Almost) any inventory is possible*.

(19)   *Why not deny markedness entirely?*
        i.e. freely rankable *{dors}, *{lab}, *{cor}, *{glottal}?
        • Problem: fails to account for epenthesis and neutralization asymmetries.

(20)   *This solves an unanswered question:*
        Q: Why *should* consonant epenthesis and neutralization outputs show markedness asymmetries?
        A: For those phenomena, preservation is irrelevant.
                • For epenthesis, there's nothing underlying to preserve
                • For neutralization, every option *equally* fails to preserve the underlying form, so preservation is irrelevant.

(21) Standard Malay codas [p t ʔ] (Lapoliwa 1981:88-9)
(a) /k/→[ʔ] in codas

Root	Final codas	Medial codas	Onsets
/baik/	baiʔ 'good'	baiʔ.-lah 'all right'	kə-bai.k-an
/didik/	di.diʔ 'educate'		didik-an
/duduk/	du.dʊʔ 'sit'	du.dʊʔ.-kan 'to seat'	du.du.k-i
/gərak/	gə.raʔ 'move'	gə.raʔ.-lah 'move it'	gə.ra.k-an
/pendek/	pen.dɛʔ 'short'	pə.ndeʔ.-ɲa 'in short'	kə.-pən.de.k-an
/sorak/	so.raʔ 'shout'	so.raʔ.-ɲa 'way he shouted'	so.ra.k-i

(b) /p t/ surface faithfully

[i.kat]   'to tie'   [a.tap]   'roof'
[sa.kat]   'parasitic plant'   [lə.tup]   'to explode'
[su.ŋut]   'grumble'

(22) *Direction of neutralisation*

/...k/	*{dors}	IDENT{dors}	*{dors,lab}	*{dors,lab,cor}
(a) ...k	*!		*	*
(b) ...p		*	*!	*
(c) ...t		*		*!
☞ (d) ...ʔ		*		

• Neutralisation will always result in the least marked feature value

(23) *PoM's Result*
Markedness asymmetries will never be overtly apparent when preservation is relevant.
• e.g. undergoers of neutralization, inventory structure, undergoers of assimilation, the output of coalescence, etc. will never show markedness asymmetries.

(24) *Further prediction*
Markedness reduction is *always* an option.
There is no phenomenon which must produce the most marked element (cf. de Haas 1988, cf.cf. de Lacy 2002:ch.8)

4. Conflation

(25) **The issue**
Markedness distinctions are sometimes ignored.

(26) *Kashaya PoA neutralization* (excerpted from Buckley 1994:99ff)
(a) /ʃeʔeṭ/   →   [ʃeʔeʔ] 'basket'
(b) /maːcac/   →   [macaʔ] 'they'
(c) /mihjoq/   →   [mihjoʔ] 'woodrat'

(27)   *Markedness reduction (as expected)*

	/…k/	*{dors,lab,cor}	IDENT{dors,lab,cor}
	(a) …k	*!	
	(b) …t	*!	
☞	(c) …ʔ		*

(28)   *Neutralisation gets blocked*
     • Neutralisation is blocked before another glottal
          (a) /ʃeʔet̪-ʔemu/   → *[ʃeʔeʔ-ʔemu] 'that's a basket'
          (b) /maːcac-ʔemu/   → *[maːcaʔ-ʔemu] 'that's them'
          (c) /mihjoq-ʔ/   → *[mihjoʔʔ] 'it's a woodrat'
          (d) /kúlweth/   → *[kúlweʔh] 'cattle'
          (e) /teph/   → *[teʔh] 'unmarked game stick'
          (f) /kilakh/   → *[kilaʔh] 'eagle'
          (g) /ʃakitáqh/   → *[ʃakitaʔh] 'puffin'

(29)   *What causes the blocking*?
     • The OCP (*glottal+glottal) blocks *[kilaʔh]
          (i) It also blocks primary-secondary PoA being the same: e.g. *[kilaʔ^h]

(30)   *What should happen?*
     • If elimination of dorsals in codas is due to markedness reduction,
     and dorsals are blocked from becoming the least marked PoA (glottal)
     they should therefore become the next least marked PoA (coronal):
     i.e. /…k-h/ should become […th]
     • And there is no problem with this option because [th] appears freely elsewhere.
     (• This option does happen in some dialects of Spanish, in an analogous environment)

(31)   *What does happen: conflation*
     /…k-h/ remains faithful:
          [kilakh] 'eagle', [ʃakitáqh] 'puffin', etc.
     • So, dorsals, labials, and coronals are all seen as *more marked* than glottals.
     • But otherwise there is no distinction: coronals are not treated as less marked than dorsals and labials.

(32)   *The solution*
     It is not correct to say that 'dorsals are more marked than coronals'
     Instead: 'coronals are never more marked than dorsals'
     • The constraints express conflation:
          *{dors,lab,cor} assigns *equal* violations to dorsals and coronals…

(33)

/…k-h/	OCP	*{dors,lab,cor}	IDENT{dors,lab,cor}	*{dors}
(a) ʔh	*!		*	
(b) th		*	*!	
☞ (c) kh		*		*

     • The constraints that favour dorsals over coronals (e.g. *{dors}, *{dors,lab}) are crucially ranked below the faithfulness constraint.

(34)   *Result of conflation*
    It is not accurate to say '*x is more marked than y*';
    instead, '*y is never more marked than x*'
    • This formulation allows *x* and *y* to be conflated.
    • Formal result: conflation of *x* and *y* comes about when *x* and *y* incur the same violations of active constraints.

5. Conflict

(35)   **The Issue**
    There is variation as to which segment is least marked both across and within languages.

(36)   *Glottals and Coronals*
    • Variation across languages
    (a) Mabalay Atayal has epenthetic [ʔ], but Axininca Campa has [t] (Payne 1981)
    (b) Some languages neutralize to coronal:
        Basque to [t], Somali nasals to [n], Taiwanese to [t] (even though [ʔ] is available.
    -- i.e. languages can choose between 'coronal' and 'glottal' as the least marked PoA.
    • Variation within languages
    Genovese neutralizes to glottal in codas but to coronal in onsets (Ghini 2001)

(37)   *Two questions arise*
    (a) How do we account for the coronal-glottal variation?
    (b) Is variation in the least marked segment surprising? Does it weaken the theory?

(38)   *How to account for variation*
    (a) PoA: | coronal ⟩ glottal |
    (b) 'H': | glottal ⟩ coronal |
    • I suggest H is the sonority hierarchy. Glottals [ʔ h] consistently act as highly sonorous in many phonological phenomena.
    • Sonority hierarchy: | … glottals (⟩) glides ⟩ liquids ⟩ nasals ⟩ fricatives ⟩ stops |

(39)   *The constraints*
        (a) *MAR/glottal "No glottals in syllable margins (onsets, codas)
                                (after Prince & Smolensky 1993)
        (b) *ONS/glottal "No glottals in onset"
                                (after de Lacy 2000; also see Smith 2002)

(40)   *Epenthetic coronals (as in Asheninca Campa)*

/a/	*MAR/glottal	*{dors,lab,cor}	*{dors,lab}
(a) a<u>ʔ</u>	*!		
(b) a<u>p</u>		*	*!
☞ (c) a<u>t</u>		*	

(41)   *Variation in the same language: Glottal codas, coronal onsets*

/kak/	*ONS/gl	*{dors,lab,cor}	*MAR/gl
(a) ʔaʔ	*!		* *
(b) tat		* *!	
☞ (c) taʔ		*	*

        • Note: Impossible to get neutralization to glottals in onsets and coronal in codas.

(42)   *Skepticism*
        • Does allowing hierarchy conflict mean that the theory predicts anything?

(43)   *Response*
        (a) The sort of conflict I'm advocating is 'incidental' conflict
                While glottals are the least marked feature value for PoA,
                it just so happens that they necessarily are more sonorous than coronal
                voiceless stops.
        (b) There is no direct conflict. i.e. there is no hierarchy | glottal 〉 coronal |

(44)   *Labials and dorsals are still highly marked*
        (a) [p] differs from [t] *only* in PoA – i.e. a 'markedness minimal pair'.
        (b) Because | dorsal 〉 labial 〉 coronal |, dorsals and labials will *always* be more
        marked than coronals.
                They can therefore never be epenthetic or the output of neutralization.

(45)   *Is hierarchy conflict a surprise?*
      (a) Is it possible to impose a meta-restriction on hierarchies to *avoid* conflict?
      (b) It's possible to ban direct conflict:
           If $|\alpha F \rangle \beta F|$ in hierarchy H, then there is no hierarchy in which $|\beta F \rangle \alpha F|$
      (c) It's very difficult to ban indirect conflict:
           If $|\alpha F \rangle \beta F|$ in hierarchy H,
           and there is some feature value $[\gamma G]$ that is necessarily associated with $[\beta F]$,
           and some feature $[\delta G]$ that is associated with $[\alpha F]$,
           then there is no hierarchy in which $|\gamma G \rangle \delta G|$
      • Many complexities in this restriction (e.g. "necessarily associated with")

(46)   *Result of hierarchy conflict*
      There is no such thing as 'the unmarked segment/consonant/vowel'
      • Segment *x* may have an unmarked feature value $[\alpha F]$ wrt one hierarchy,
      but *x* may have a marked feature value $[\alpha G]$ in some other hierarchy.
      • Variation is therefore expected, but not every segment is a possible default.

6.   Is markedness in i-language?

(47)   *So, what's left to explain?*
      For PoA: • labials and dorsals are never epenthetic
                    • PoA neutralization never produces labials and dorsals
      • cf. Hume & Tserdanelis (2002), Hume (2003), Vaux (2001) who claim that anything is possible, and Rice (1996 et seq.) who claims that a lot more is possible under complex circumstances.
           • cf. me (in press) who argues they're wrong.

(48)   *Should i-language explain these facts?*
      (a) Blevins (2004) *Evolutionary Phonology*:
           (i) "recurrent sound patterns have their origins in recurrent phonetically motivated sound change" (Blevins 2004:8).
           (ii) "Certain sound patterns are rare or unattested, because there is no common pathway of change which will result in their evolution" (Blevins 2004:9).
      (b) *Summary:*
           (i) The phonological component can in principle generate *anything*.
           (ii) The likelihood of some grammars being learnt is very low.
           (iii) This explains all markedness effects.

(49)   *Diachronic-synchronic mismatches*
      (a) A number of languages have $*t \rightarrow k$
           (i) Hawaiian, Luangiua and several other Oceanic languages (Lynch et al. 2002:ch.4)

          (ii) Fort Chipewyan Chipewyan (Haas 1968)
          (iii) Maracaibo Venezuelan Spanish (Trigo 1988)
          (iv) Classical Fuzhou (Chen 1973)
    (b) No language has neutralization to [k]
    (c) No language has epenthetic [k]

(50)   *Proto-Eastern Polynesian (PEP) → Hawaiian*
        (a) PEP probably had epenthetic [t]
        (b) PEP *t → Hawaiian k
        (c) Therefore the epenthetic consonant at least *could* be [k]
        (d) But it's [ʔ].

(51)   *Kiparsky's (2004) point: crazy systems from natural changes*
        • Natural diachronic changes (even ones with synchronic correlates) can easily result in unattested systems.

(52)   *The Result*
        i-language principles restrict the result of diachronic change.
        The restrictions show markedness asymmetries, so there are markedness mechanisms in i-language.

(53)   *What about Performance?*
        (a) Could we appeal to other Performance mechanisms?
              • Markedness in i-language has often been confused with 'external' markedness.
        (b) typological frequency, text frequency, inventory frequency
              • No 'frequency diagnostic' shows the same relations as i-language markedness. Glottals are much less frequent than coronals and velars (from UPSID).
              • 'Frequency diagnostics' show tendencies, not absolutes.
                    While [t] is typologically more common than [p], there are languages with [p] and no [t].
        (c) loanwords, language disorders
              • Recent work shows that many loanword adaptations are done pre-phonology (Peperkamp & Dupoux 2003, in press)
              • Perhaps the same with language disorders

(54)   *The Result: i-language markedness & synchronic alternations*
        The only sure way of getting insight into i-language markedness is through *synchronic alternations* (e.g. neutralization, epenthesis).

7. Conclusions

(55)   *Summary of points*
        (a) There are i-language mechanisms that create asymmetries (i.e. markedness)
        (b) Markedness effects are visible only when
                (i) preservation is irrelevant (due to 'Preservation of the Marked')
                (ii) there is no conflicting hierarchy
        (c) Only synchronic alternations provide certain evidence for markedness.

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