

Phonemic analysis and lexical representation

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Phonological analysis based narrowly on neutralization patterns indicates phonemic segmental structure and prosodic structure to be fully specified in lexical representations. Specific predictions follow and are subject to empirical verification. Claims are illustrated with German data.

Phonemic analysis based on neutralization

Consider the proportional opposition referred to as "A" versus "B" in (1), which involves correlating differences regarding vowel quality, duration, and syllable structure. Duration differences are robust both acoustically and perceptually for all pairs. Quality differences are not robustly perceived for the low vowels ([a] ≠ [a]), but are robust acoustically ([a] ≠ [a]).

(1)	A	B	A	B
	ω Σ / \ σ_s σ_w / \ / \ ON ON /R [o:] b ə/	ω Σ / \ σ_s σ_w / \ / \ ON CON /R [ɔ] b ə/	/R[o:]bə/ 'robe' /m[i:]tə/ 'rent' /p[u:]tə/ 'turkey hen' /f[y:]lən/ 'to feel' /k[e:]lə/ 'throat' /h[ø:]lə/ 'cave' /R[ɑ:]tə/ 'rate'	/R[ɔ]bə/ 'seal' /m[ɪ]tə/ 'middle' /p[ʊ]tə/ 'putto' /f[ʏ]lən/ 'to fill' /k[ɛ]lə/ 'ladle' /h[œ]lə/ 'hell' /R[a]tə/ 'rat'

A-B contrast is possible for ALL pairs only before a single consonant in the main stress syllable within the phonological word. This restriction indicates positional faithfulness referring to the phonological word, the strong foot, and the strong syllable (The contrast in (1) indicates positional faithfulness dominating a constraint prohibiting ambisyllabicity).

A-B neutralization patterns are uniform for ALL pairs, including low vowels. They indicate active markedness constraints universally known to refer to quality.

(2)a. No "quality A" vowels in closed syllables. No "quality B" vowels in open syllables

=> These contexts indicate markedness concerning vowel quality, not quantity
(cf. *Loi de Position* in French)

b. No "quality A" vowels before "quality B" vowels within foot

=> This type of markedness constraint (harmony) universally refers to segmental quality, not quantity, not syllable structure

Consequences for lexical representation:

Reference to some vowel quality feature (e.g. ([±peripheral])), to phonological word boundaries, strong feet, strong syllables in phonological grammar indicate phonemic (i.e. lexical) specification of vowel quality (e.g. /RÓbə/ 'robe', /RÓbə/ 'seal', /áuto/ 'car' /gýrɔs/ 'gyro') and prosodic organization. No reference to subphonemic properties in phonological grammar and therefore no lexical specification thereof (i.e. duration).

Three predictions (to be illustrated with experimental data):

- Potential PU effects for vowel quality (Very systematic: *Áut*[o] 'car' - *Áut*[o]s 'cars' (cf. *Gýr*[ɔ]s 'gyro'), *Mar*[ɔ]kko - *Mar*[ɔ]kkáner 'Moroccan' (cf. *Ir*[o]kése 'Iroquois')

- No PU effects for duration (Indeed no trace of such effects (*Pl*[á:]to 'Plato' - *pl*[a]tónisch 'Platonic' (same length as [a] in *Pl*[a]táne 'plane tree')).

- subphonemic properties consists of language-specific but highly restricted modifications (rather than changes) of duration or strength of lexically specified phonological structure, characterized by universal asymmetries (e.g. low vowels significantly longer than mid vowels (*M*[ɑ:]de 'maggot' vs. *M*[o:]de 'fashion'), vowels in main stress syllables significantly longer than vowels in secondary stress syllables (*Hermel*[í:]n 'ermine' vs. *Zéppel*[i:]n 'zeppelin')

