LEXICAL STRESS IN GERMAN MONOMORPHEMES

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ABSTRACT

Lexical stress of German monomorphemes has been systematically studied with the help of CELEX, a large lexical database developed at the Max-Plank-Institute for Psycholinguistics in Nijmegen. The investigation has revealed that German is a quantity-sensitive language. In the second part of this paper, a theoretical account of word stress in the Optimality Theory (OT) framework is sketched. German has no exhaustive footing, but only a final trochee and an initial foot, preferably also trochaic.

GERMAN STRESS

In German, lexical stress, which we only consider on di- and trisyllabic monomorphemes, has been systematically examined by means of words listed in CELEX which contains 11,900 disyllabic words and 19,227 trisyllabics. If one eliminates compounds, proper names, derived words (most of which have an unstressed suffix), and some redundancies (like words listed with two orthographies), there remain about 2,500 monomorphemic disyllabic words and ca. 1,300 trisyllabic ones.

Disyllabic words

Some examples of initially stressed disyllabic words: (μ = mora)
2μ2μ: Gecko, Pudding, Mammut, Drama, Judo, Efeu, Scharlach, Firma, Kürbis,
2μ3μ: Pharynx, Gepard, Demut, Platin, Index, Schicksal, Turban, Kleinod
3μ2μ: extra, Arktis, Müesli, Plankton
3μ3μ: Leutnant, Sandwich, Labskaus
Some examples of finally stressed disyllabic words:
2μ2μ: Kopie, Partei, Schafott, Pardon, Büro, April
2μ3μ: Figur, Fasan, Student, Alaun, Menthol, Reptil, kompakt, Kamel
3μ3μ Symptom, extrem

Table 1. Disyllabic words

	full vowel in second syllable	schwa in second syllable
stress on the 1st syllable	577	approx. 1930
stress on the 2nd syllable	918	0

Table 2. Moraic count in initially stressed words

2μ2μ	2μ3μ	3μ2μ	3μ3μ
472	83	17	5

Table 3. Moraic count in finally stressed words

2μ2μ	2μ3μ	3μ3μ
195	706	17

Trisyllabic words

Examples of initially stressed trisyllabics:
2μ2μ2μ: (pronounced as disyllabics) Prämie Linie Stadion Thymian
2μ2μ2μ: (true trisyllabics) Embryo Ozean Pinguin Februar stereo Exodus Kolibri
2μ2μ0μ: Roboter Araber
Examples of medially stressed trisyllabics:
2μ2μ0μ: Schimpanse Oktober Forelle Lavendel
2μ2μ2μ: Inferno Albino Veranda Pyjama Meniskus Bazillus Inspektor Professor
Examples of finally stressed trisyllabics:
2μ2μ3μ Appetit Kormoran Vitamin Diamant Katafalk Vagabund
2μ2μ2μ Omelett Karusell Kompromiß Theorie

Table 4. Trisyllabic words

stress on the first syllable	255 (38 with final schwa, 217 others)
stress on the second syllable	664 (528 with final schwa, 136 others)
stress on the third syllable	393

Table 5. Moraic count of the stressed syllable

	2μ	3μ
Stress on the first syllable	254	1
Stress on the second syllable	663	1
Stress on the third syllable	94	299
Total	1011	301

OPTIMALITY ACCOUNT

German has nonmoraic syllables (with a schwa or a syllabic sonorant as nucleus), bimoraic syllables (with a tense vowel, or a lax vowel plus a consonant), and (usually final) trimoraic syllables (tense vowel plus consonant or lax vowel plus two consonants), but no monomoraic syllables (consisting of a lax vowel). Final trimoraic syllables attract stress; otherwise the default stress location is on the penult. The antepenult can be stressed if the final syllable is bimoraic and the penult is open (*Páprika, Braütigam*, but *Veránda, Forélle*).

Stress can also be prespecified: some final bimoraic syllables are stressed (*Theoríe, Spinétt*). Optimality Theory (presented in [1] and [2]) accounts for these intricate data in an elegant way. The following constraints are needed: FOOT-BINARITY (Feet must be binary under syllabic or moraic analysis), FOOT-FORM (TROCHAIC) (Ft -> $\sigma_s \sigma_w$ or Ft -> σ_s), ALIGN-TROCHEE-RIGHT (Every Prosodic Word ends with a syllabic trochee), ALIGN-FOOT-LEFT (Every Prosodic Word begins with a foot).

Figure1. Tableau of the word 'Mámmut'

σ σ /\ /\ μμ μ μ |		| m a m ʊ t *Mammut*	FOOT-BINARITY	ALIGN-TROCHEE-RIGHT	ALIGN-FOOT-LEFT	FOOT-FORM (TROCHAIC)
a. (x .) ☞ Mammut				
b. (x)(x) Mam mut		*!		**
c. (. x) Mammut		*!		*
d. (x) Mammut		*		*

Figure 2. Tableau of the words 'Sekúnde'.(On the bottom of the tableau, the stress pattern of the quadrisyllabic *'Apotheóse'* and *'Marsupilámi'* is shown.)

σ σ σ /\ /\ μμ μμ \/	| ze ku n də *Sekunde*	FOOT-BINARITY	ALIGN-TROCHEE-RIGHT	ALIGN-FOOT-LEFT	FOOT-FORM (TROCHAIC)
a. (x) (x .) ☞ Se kunde				*
b. (x .) (x) Sekun de	*!	*		*
(x .) (x .) ☞ A p o the óse ☞ Marsu pi lámi				

Further relevant constraints are: ALIGN-HEAD (The right edge of every PrWd coincides with its head, THREEMORAS = TWOGRIDPOSITIONS.

This last constraint forces a trimoraic syllable to project two grid positions, as proposed in [3], thus to form a trochee.

Figure 3. Tableau of the words 'Kamel'

σ σ /\ /| \ μμ μμ μ |	V | k a m e l *Kamel*	3μ = 2x	FOOT-BINARITY	ALIGN-TROCHEE-RIGHT	ALIGN-FOOT-LEFT	ALIGN-HEAD	FOOT-FORM (TROCHAIC)
a. x (x) (x.) ☞ Ka mel						*
b. x (x .) Kamel	*!					
c. x (. x .) Kamel		*!	*			*
d. x (x) (x.) Ka mel					*!	*

Prespecified stresses are accounted by a constraint called FAITH (All input grid positions are kept) which, like FOOT-BINARITY and THREEMORAS = TWO GRIDPOSITIONS, is unviolated.

Figure 4. Tableau of the words 'Spinett

σ σ /\ /\ μμ μμ |		| Sp i n e tt *Spinett*	FAITH	FOOT-BIN	ALIGN-TRO-RIGHT	ALIGN-FT-LEFT	ALIGN-HEAD	FOOT-FORM (TROCHAIC)
a. x (x) (x) ☞ Spinett			*			**
b. x (x.) Spinett	*!					

REFERENCES

[1] McCarthy, J. & A. Prince (1993) *Prosodic Morphology I: Constraint interaction and satisfaction*. To appear, MIT Press. (also: Technical Report #3, Rutgers University Center for Cognitive Science.)

[2] Prince, A. & P. Smolensky (1993) *Optimality Theory: Constraint interaction in generative grammar*. University of Colorado, Boulder: Ms.

[3] Prince, A. (1983) Relating to the grid. *Linguistic Inquiry 14*. 19-100.