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Disyllables and Syllable Weight

Quentin Dabouis, Jean-Michel Fournier
Laboratoire Ligérien de Linguistique
(UMR 7270)



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1-Syllable weight and its limits



Original hypothesis formulated by Chomsky & Halle (1968), Halle & Keiser (1971):

(Southern) Romance logic: heavy syllables retain stress

Limitations :

1) Suffixation :

/200, ± 170 suffixes have no effect on the pronunciation of the deriving form:

heavy syllable: 'stylize, 'boyhood, 'artist...

light syllable: 'elevator, 'lightly...

General contradiction: syllable weight processes are insensitive to suffixation

⇒ Not consistent with the diachronic part of the argument, i.e. inherited from Med. Latin and O. F. (cf *Language Sciences*, LSC 469)

1-Syllable weight and its limits



2) Neutralisation of the final syllable of long words (>2 syll.),
e.g. '*demonstrate* → ALTERN

⇒ Remaining significant cases:

- disyllables
- penultimate in long words

Despite these flagrant limitations, generally adopted by the linguistic community.



2- The case of disyllables



Lionel Guierre (1983): long vowels in disyllables

- #: $/-1/$: ± 75 : *July...* ~ $/-0/$: > 200 : *rabbi...*
- C#: pref nouns : $/-1/$: 13: *advice...* ~ $/-0/$: ± 190 : *profile...*
(other categories : massively $/01/$, \forall final σ)
non-pref.: $/-1/$: 160: *police...* ~ $/-0/$: ± 245 : *ogive...*

Corpus: computerised version of Jones's 12th edition



2.1- Our corpus

LLL dictionary database:

- Cambridge English Pronouncing Dictionary, 17th edition
- Longman Pronunciation Dictionary, 3rd edition
- Macquarie Dictionary of Australian English, 4th edition

Data selection: observation on suffixed derivatives \Rightarrow removal of constructions containing either free or learned roots:

- suffixed forms in /10/: *stylize, chloryde, ovoid...*
- prefixed forms in /01/: *dismount, return...*
- compounds: *blackbird, bankrupt...*

i.e. neutralisation of the morphology parameter



2.2- Corpus: figures

Selected data

	/10/	
Short vowels	1055	24%
Long vowels	884	20%
Reduced vowels	2417	55%
Total /10/	4356	74%
	/01/	
Short vowels	495	32%
Long vowels	1036	68%
Total /01/	1531	26%
TOTAL	5887	

Raw data

	/10/	
Short vowels	3317	28%
Long vowels	3248	28%
Reduced vowels	5145	44%
Total /10/	11710	84%
	/01/	
Short vowels	764	33%
Long vowels	1546	67%
Total /01/	2310	16%
TOTAL	14020	



2.2- Results (a)

Long vowels			Short vowels		
/i0/	884	46%	/i0/	1055	68%
/01/	1036	54%	/01/	495	32%
Total	1920		Total	1550	

Long vowels			→ Vr →	Short vowels		
/i0/	719	48%	165	/i0/	1220	62%
/01/	788	52%	248	/01/	743	38%
Total	1507		413	Total	1963	

2.2- Results (b)



	Short vowels (2)					
	+ C		+ C ₂		+ C ₂ red. included	
/10/	888	79%	167	39%	324	55%
/01/	234	21%	261	61%	261	45%
Total	1122		428		585	

3- Disyllabic verbs



In a previous study (PAC 2010), we investigated the role of morphology in stress placement in disyllabic verbs through a corpus study of 2,547 verbs.

We found that morphology is the determining factor:

	/1-1/		/1-1/		Total	% Total
	nbr	%	nbr	%		
Suffixed	178	73.5%	64	26.5%	242	10%
<i>derived</i>	79	9.1%	5	5.9%	84	3%
<i>non-derived</i>	99	62.7%	59	37.3%	158	6%
Compounds	246	84.8%	44	15.2%	290	11%
Prefixed	94	7.4%	1172	92.6%	1266	50%
Stems	668	89.2%	81	10.8%	749	29%
Total	1186	46.6%	1361	53.4%	2547	100%

“Verbhood” cannot be the determining factor

3.1- Context



The most commonly accepted generalisation about the stress pattern of verbs since Chomsky & Halle (1968) is that it depends on the weight of the final syllable.

This is the rule that can be found in textbooks such as Roach (2000: 110) or Cruttenden (2008: 238).

There are several variants of that generalisation, let us consider two:

- HEAVY-EM(C): Final heavy syllables are stressed, but the final consonant is extrametrical (Hayes, 1982)
- SUPERHEAVY: Final superheavy syllables are stressed (Burzio, 1994: 43; Giegerich, 1999: 380; Hammond, 1999: 263)

3.2- The problem of vowel reduction



Are vowels reduced because they are unstressed or are they unstressed because they are reduced?

What weight can be attributed to reduced vowels? Some have suggested that they had less weight than full vowels or even that they had no weight at all (Burzio, 2007; Duanmu, 2010; Hammond, 1999).

→ Exclusion of the 621 verbs with a reduced vowel in the ultima:

	/ɪ-/	/-ɪ/
Suffixed	107	0
<i>derived</i>	74	0
<i>non-derived</i>	33	0
Compounds	9	0
Prefixed	22	0
Stems	483	0
Total	621	0

3.3- The two hypotheses



Five different syllable types are found in the remaining data: VC, VCC, VV, VVC and VVCC.

The two hypotheses mentioned previously predict that the following syllables types should attract stress:

Syllable type	HEAVY-EM(C)	SUPERHEAVY
VC		
VCC	✓	✓
VV	✓	
VVC	✓	✓
VVCC	✓	✓

3.4- Results



We saw previously that there is a strong influence of morphological structure on stress placement.

→ Prefixation could strongly bias the results.

The results will be presented by morphological structure, in order to be able to evaluate the role of syllable weight overall and within different structures.

3.4- Global results: Late stress per morphological structure



Syllable type	Suffixed	Compounds	Prefixed	Stems	Total
VC	3.1%	12.4%	86.4%	16.5%	39.5%
VCC	Insufficient data	16.7%	94.7%	36.8%	86.0%
VV	Insufficient data	32.4%	93.5%	25.6%	66.8%
VVC	86.2%	12.4%	96.1%	70.8%	80.9%
VVCC	No data	18.7%	96%	Insufficient data	81.5%

Global figures: SUPERHEAVY seems like a good prediction with over 80% of late stress in classes predicted to be late stressed.

3.4- Global results: Late stress per morphological structure



Syllable type	Suffixed	Compounds	Prefixed	Stems	Total
VC	3.1%	12.4%	86.4%	16.5%	39.5%
VCC	Insufficient data	16.7%	94.7%	36.8%	86.0%
VV	Insufficient data	32.4%	93.5%	25.6%	66.8%
VVC	86.2%	12/4%	96.1%	70.8%	80.9%
VVCC	No data	18.7%	96%	Insufficient data	81.5%

If we neutralise morphology and consider only stems, those figures drop considerably, even though a tendency to have final stress when weight increases can be observed

3.4- Global results: Late stress per morphological structure



Syllable type	Suffixed	Compounds	Prefixed	Stems	Total
VC	3.1%	12.4%	86.4%	16.5%	39.5%
VCC	Insufficient data	16.7%	94.7%	36.8%	86.0%
VV	Insufficient data	32.4%	93.5%	25.6%	66.8%
VVC	86.2%	12/4%	96.1%	70.8%	80.9%
VVCC	No data	18.7%	96%	Insufficient data	81.5%

None of the hypotheses can account for all figures observed for prefixed verbs, and none can account for the 86.4% (154 verbs) of prefixed verbs with VC.

3.5- Conclusions



- As could be expected, morphology strongly biases the result. To neutralise it, we considered only stems.
- Syllable weight seems to be irrelevant in most cases but one: verbs with VVC ultimas. The latter are late stressed in 70.8% of cases. However, two objections can be raised:
 - 70.8% does not make a generalisation: it is closer to chance than to determination;
 - These 70.8% represent only 34 verbs (e.g. *blaspheme*, *harpoon*, *salute*).

3.5- Conclusions



Crucially, let us compare the efficiency and productivity of the following two rules:

- Prefixed verbs are late stressed: 92.6%, 1,266 verbs.
 - This count includes multicategorical verb/noun pairs (e.g. *combat*) and structures whose prefixal status is debatable (e.g. *fore-*, *out-*, *up-*)
 - If these two structures are taken out, the efficiency of the rule would be even greater
- Verbal stems with a VVC ultima are late stressed: 70.8%, 34 verbs.



Thank you for you attention!



References



- BURZIO, L. (1994). *Principles of English Stress. Cambridge Studies In Linguistics* (Vol. 72). New York: Cambridge University Press.
- CHOMSKY, N. & HALLE, M. (1968). *The Sound Pattern of English*. Cambridge, MA, London, England: Harper & Row.
- CRUTTENDEN, A. (2008). *Gimson's Pronunciation of English* (Seventh Ed). London: Edward Arnold Publishers Limited.
- DESCLOUX, E., FOURNIER, J.-M., FOURNIER, P., GIRARD, I., MARTIN, M. (2010), Structure, variation, usage and corpora: the case of word stress assignment in disyllabic verbs. Communication at the PAC Workshop at the Université of Montpellier (13-14th September).
- DUANMU, S. (2010). Onset and the Weight-Stress Principle in English. In *Linguistic essays in honor of Professor Tsu-Lin Mei on his 80th birthday* (pp. 1–31).
- FOURNIER, J.-M. (2007). From a Latin syllable-driven stress system to a Romance versus Germanic morphology-driven dynamics: in honour of Lionel Guierre. *Language Sciences*, 29, 218–236.
- GIEGERICH, H. (1999). *Lexical Strata in English: Morphological Causes, Phonological Effects*. Cambridge: Cambridge University Press.
- HALLE, M. & KEYSER, S. (1971). *English Stress: Its Form, Its Growth, and its Role in Verse*. New York: Harper & Row.
- HAMMOND, M. (1999). *The Phonology of English: A Prosodic Optimality-Theoretic Approach*. (J. Durand, Ed.) (The Phonol). Oxford: Oxford University Press.
- HAYES, B. (1982). Extrametricality and English Stress. *Linguistic Inquiry*, 13(2), 227–276.
- ROACH, P. (2000). *English Phonetics and Phonology: A Practical Course* (Third Edit). Cambridge: Cambridge University Press.
- WELLS, J.C. (2008), *Pronunciation Dictionary*, 3rd edition, London: Longman.

Verbs – Results VC



Syllable type: VC	/1-/ VC		/-1/ VC		Total	% Total
	nbr	%	nbr	%		
Suffixed	63	96.9%	2	3,1%	65	16%
derived	5	100%	0	0%	5	1%
non-derived	58	96.7%	2	3,3%	60	14%
Compounds	71	87.6%	10	12.4%	81	20%
Prefixed	21	13.6%	133	86.4%	154	37%
Stems	96	83.5%	19	16.5%	115	28%
Total	251	60.5%	164	39.5%	415	100%

Verbs – Results VCC



Syllable type: VCC	/1-/ nbr		/-1/ nbr		Total	% Total
		%		%		
Suffixed	0	0%	9	100%	9	3%
derived	0	0%	0	0%	0	0%
non-derived	0	0%	9	100%	9	3%
Compounds	15	83.3%	3	16.7%	18	6%
Prefixed	15	5.9 %	238	94.1%	253	85%
Stems	12	63.2 %	7	36.8%	19	6%
Total	42	14.0%	257	86.0%	299	100%

Verbs – Results

VV



Syllable type: VV	/1-/		/-1/		Total	% Total
	nbr	%	nbr	%		
Suffixed	0	0%	3	100%	3	1%
derived	0	0%	1	0%	1	0%
non-derived	0	0%	2	100%	2	1%
Compounds	25	67.6%	12	32.4%	37	13%
Prefixed	11	6.5%	158	93.5%	169	58%
Stems	61	74.4%	21	25.6%	82	28%
Total	97	33.3%	194	66.7%	291	100%

Verbs – Results VC



Syllable type: VVC	/1-/ nbr		/-1/ nbr		Total	% Total
		%		%		
Suffixed	8	13.8%	50	86.2%	58	7%
derived	0	0%	4	100%	4	0%
non-derived	8	14.8%	46	85.2%	54	7%
Compounds	113	87.6%	16	12.4%	129	16%
Prefixed	23	3.9%	571	96.1%	594	72%
Stems	14	29.2%	34	70.8%	48	6%
Total	158	19.1%	671	80.9%	829	100%

Verbs – Results VC



Syllable type: VVCC	/1-/		/-1/		Total	% Total
	nbr	%	nbr	%		
Suffixed	0	0%	0	0%	0	0%
Compounds	13	81.3%	3	18.7%	16	17%
Prefixed	3	4.0%	71	96.0%	74	80%
Stems	1	50.0%	1	50.0%	2	2%
Total	17	18.5%	75	81.5%	92	100%