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The distribution of English vowels and glides, and the representation of diphthongs in Strict CV Phonology

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1. Stress-to-Weight in English

(1) distribution of stressed vowels in syllable structure in English (Received Pronunciation) (e.g. Burzio 2007, Chomsky & Halle 1968, Gimson 1980, Kreidler 1989, Nádasdy 2006, Wells 1982, 1990)

		(i) short	(ii) long
internal	(a) _ $CV	ˈsɪ̲ti ‘city’	ˈmi̲ːtə ‘meter’
	(b) _ C$CV	ˈvɛ̲ktə ‘vector’	*
	(c) _ $V	*	ˈru̲ːɪn ‘ruin’
final	(d) _ #	*	bra̲ʊ̲ ‘brow’
	(e) _ C#	hʊ̲k ‘hook’	hɔ̲ːk ‘hawk’
	(f) _ CC#	gʌ̲lp ‘gulp’	*

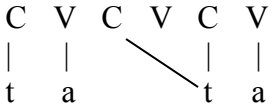
(2) generalisations

(a) short Vs must be followed by a tautosyllabic C (but: (1i.a))
(b) long Vs cannot be followed by a tautosyllabic C (but: (1ii.e))
(c) long lax Vs are also ruled out prevocalically (1ii.c)

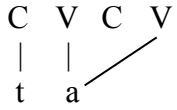
(3) strict CV (Lowenstamm 1996)

(a) *closed syllable*

(b) *geminate consonant*



(c) *long vowel*



• an empty CV-unit must be properly governed to remain in the representation
• if non-initial, at least one of its positions must eventually be filled

(4) analysis (Polgárdi in press)

(a) a stressed position in English must properly govern an empty V position (to its right)
(b) lax Vs are headless melodically (Harris 1994) ⇒ all stressed vowels are heads in some sense
(c) short Vs in seemingly open rhymes: followed by a virtual geminate (Hammond 1997)

(5) Trochaic (left-to-right) Proper Government (Rowicka 1999a,b)

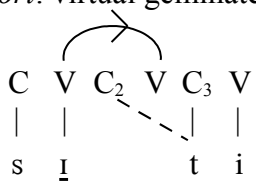
A nuclear position *A* properly governs a nuclear position *B* iff
(a) *A* governs *B* (adjacent on its projection) from left to right
(b) *A* is not properly governed

(6) loose CV (Polgárdi 1998, 2002)

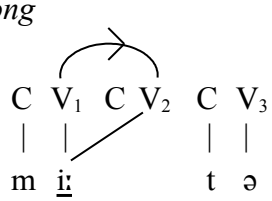
- dispenses with domain final empty nuclei that are always inaudible
- words do not need to end in a vowel: C-final words are allowed
- word medially a strict alternation of C and V positions is still required

(7) (=1a) _ $CV

(a) *short*: virtual geminate



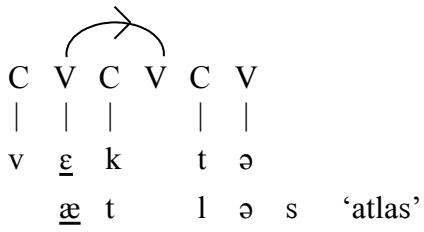
(b) *long*



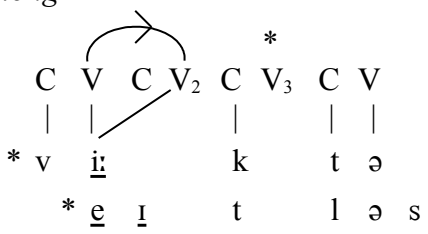
- long vowel is underlying vs. geminate is derived
- spreading as interpretation (Harris 1994)

(8) (=1b) _ C$CV

(a) *short*

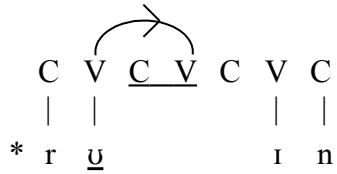


(b) *long*

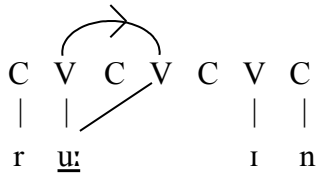


(9) (=1c) _ $V (also for (=1d) _ #)

(a) *short*: CV-unit cannot remain empty

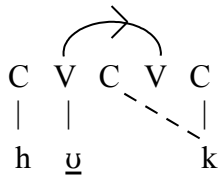


(b) *long*

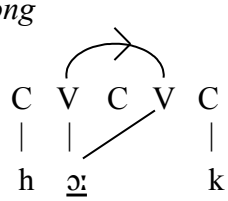


(10) (=1e) _ C# (cf. (7))

(a) *short*

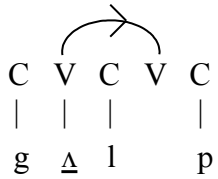


(b) *long*

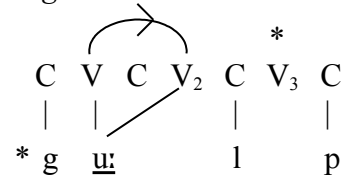


(11) (=1f) _ CC# (cf. (8))

(a) *short*



(b) *long*



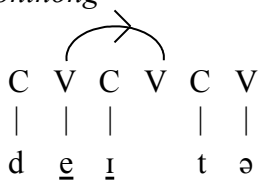
• stressed short and long Vs: in complementary distribution

2. Closing Diphthongs

• Ségéral and Scheer (1998): German diphthongs as **closed syllables** ⇐ off-glide does not take part in apophony

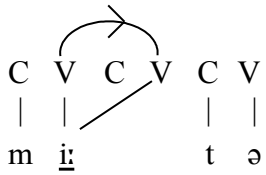
(12) same distribution, different representations

(a) *diphthong*



'data'

(b) *long monophthong*



• OK for the pattern in (1)

Problems

(13) primary stress in nouns: *final syllable extrametrical*

(a) —VC<σ>#	(b) —VV<σ>#	(c) —V<σ>#
a.gén.<da>	ho.rí.<zon>	cí.ne.<ma>
a.mál.<gam>	a.ró.<ma>	ém.pha.<sis>
	mu.sé.<um>	
	ba.ná.<na>	

• *word-internal*: closed syllables, diphthongs, long Vs are heavy

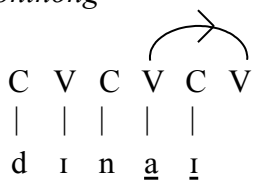
(14) primary stress in verbs: *final consonant extrametrical*

(a) —VC<C>#	(b) —VV<C>#	(c) —V<C>#
de.fén<d>	con.tái<n>	fi.ni<sh>
con.sís<t>	pro.dú<ce>	a.bán.do<n>
	de.ný	cá.rry
	ag.rée	vá.ry

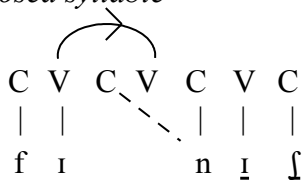
• *word-final*: diphthongs, long Vs are heavy, syllables closed by a single C are light

(15) word-final

(a) *diphthong*



(b) *closed syllable*



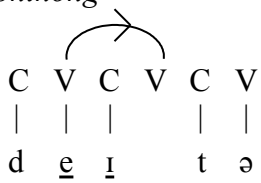
• why is the final empty V obligatory in a diphthong?

(16) phonotactic restrictions

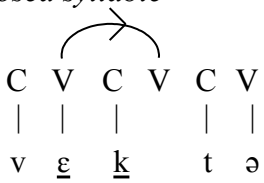
(a) *off-glide* /ɪ/		(b) *off-glide* /ʊ/		(c) *coda C*			
/eɪ/	data	/əʊ/	motor	/ɪ/	victor	/ɒ/	doctor
/aɪ/	mitre	/aʊ/	outer	/ɛ/	vector	/ʌ/	conductor
/ɔɪ/	loiter			/æ/	factor	/ʊ/	pulpit

(17) same representation, different behaviour

(a) *diphthong*



(b) *closed syllable*



3. Distribution of the glides /j w/

(18) preceding a stressed vowel

(a) v __ V	beyond	[bɪˈj̲ɒnd]		aware	[əˈw̲eə]
	picayune	[ˌpɪkəˈj̲uːn]		chihuahua	[tʃɪˈw̲ɑːwə]
	majolica	[məˈj̲ɒlɪkə]		caraway	[ˈkærəw̲eɪ]
(b) # __ V	yawn	[j̲ɔːn]		week	[w̲iːk]
	year	[j̲ɪə]		wolf	[w̲ʊlf]
	unit	[ˈj̲uːnɪt]		water	[ˈw̲ɔːtə]
(c) C _ V	repute	[rɪˈpj̲uːt]		equip	[ɪˈkw̲ɪp]
	mule	[mj̲uːl]		dwell	[dw̲ɛl]
	continuity	[ˌkɒntɪˈnj̲uːəti]		persuade	[pəˈsw̲eɪd]

(19) preceding a consonant, or at the end of the word

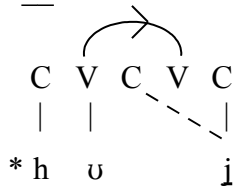
(a)	V __ C	*[vʊj̲tə]	(cf. [ˈvɛk̲tə] (1i.b))
	v __ C	*[ˈkærəj̲tə]	(cf. [ˈkærək̲tə] ‘character’)
(b)	V __ #	*[hʊj̲]	(cf. [hʊk̲] (1i.e))
	V: __ #	*[hɔːj̲]	(cf. [hɔːk̲] (1ii.e))
	v __ #	*[ˈbʌtəj̲]	(cf. [ˈbʌtək̲] ‘buttock’)

(20) preceding an unstressed vowel

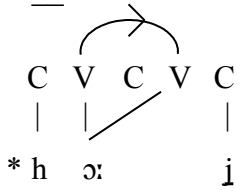
(a) v __ v		*[əj̲ə]		cassowary	[ˈkæsəw̲əri]
				Ottawa	[ˈɒtəw̲ə]
				Iowa	[ˈaɪəw̲ə]
(b) # __ v	yahoo	[j̲əˈhuː]		wazoo	[w̲əˈzuː]
	yeshiva	[j̲əˈʃiːvə]		wisteria	[w̲ɪˈstɪəriə]
	euphoria	[j̲uˈfɔːriə]		Watusi	[w̲əˈtuːsi]
(c) C __ v	accurate	[ˈækj̲ərət]		penguin	[ˈpɛŋg̲wɪn]
	bucolic	[bj̲uˈkɒlɪk]		cuirass	[kw̲ɪˈræs]
	onion	[ˈʌnj̲ən]		bulwark	[ˈbʊlw̲ək]
(d) V: __ v	halleluja	[ˌhælɪˈluːj̲ə]		peewit	[ˈpiːw̲ɪt]
	Maya	[ˈmɑːj̲ə]		narwhal	[ˈnɑːw̲əl]
	hiya	[ˈhaɪj̲ə]		Taiwanese	[ˌtaɪw̲əˈniːz]
(e) V __ v	*[ˈsɪw̲i]	(cf. [ˈsɪ̲ti] (1i.a))			

(21) glides must be followed by a filled V position

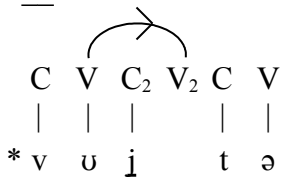
(a) V __ #



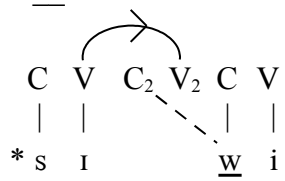
(b) V: __ #



(c) V __ C



(d) V __ v

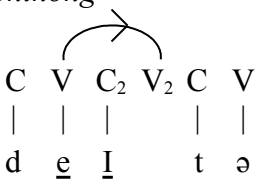


• generalisation only expressible, if short stressed vowels are followed by a virtual geminate (cf. (7a))

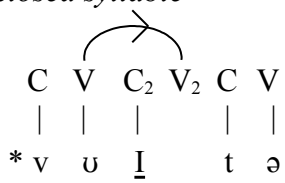
4. Representation of diphthongs

(22) diphthongs cannot be represented as closed syllables

(a) *diphthong*



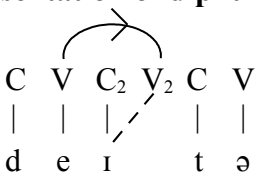
(b) *closed syllable*



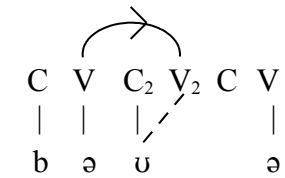
• melodically the glides /j, w/ are equivalent to their short vowel counterparts /ɪ, ʊ/ in GP, containing the sole element **I** and **U**
• here their syllabic status is also identical, yet only one of them is well-formed

(23) representation of diphthongs

(a)



(b)

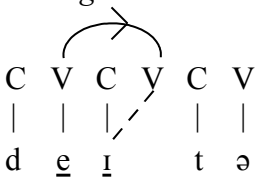


'boa'

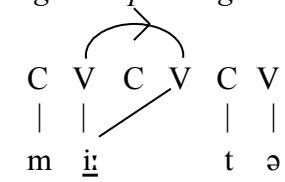
• underlying off-glide spreads to the following V position
• glides in (18-20), fulfilling a purely consonantal role, are still only connected to a C position (+ no ternary branching in (21a,d))

(24) parallel representations

(a) *diphthong*



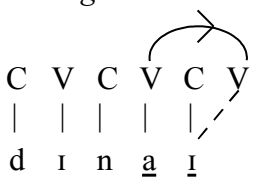
(b) *long monophthong*



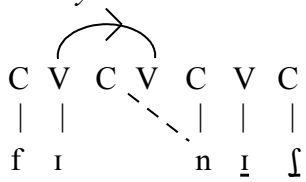
• both V positions filled ↔ closed syllables

(25) word-final

(a) *diphthong*

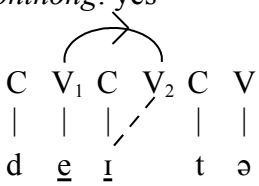


(b) *closed syllable*

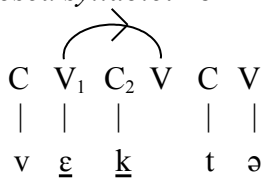


(26) phonotactic restrictions

(a) *diphthong*: yes



(b) *closed syllable*: no



(27) additional phonotactic restrictions

(a) /ɔɪ/ __ alveolar

/t/	loi<u>t</u>er
/d/	avoi<u>d</u>
/s/	cloi<u>s</u>ter
/z/	noi<u>s</u>e
/n/	joi<u>n</u>
/l/	toi<u>l</u>et

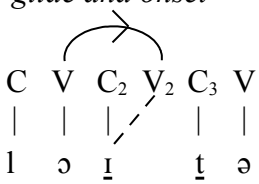
(b) /aʊ/ __ coronal

/θ ð/	sou<u>th</u>, mou<u>th</u>$_V$
/t d/	shou<u>t</u>, pow<u>d</u>er
/s z/	mou<u>s</u>e, thou<u>s</u>and
/ʧ ʤ/	cou<u>ch</u>, gou<u>g</u>e
/n/	cou<u>n</u>cil
/l/	ow<u>l</u>
/r/	cow<u>r</u>ie

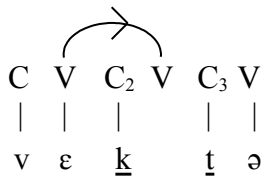
• support connecting the melody of the off-glide to the C position

(28) phonotactic restrictions

(a) *off-glide and onset*



(b) *coda and onset*



(29) advantages of this analysis

• explains the relationship of stress to the distribution of vowels and glides
• captures the nature of diphthongs as a category in between long vowels and closed syllables
• accounts for both types of phonotactic restrictions affecting diphthongs
• accounts for the patterning of diphthongs in stress assignment

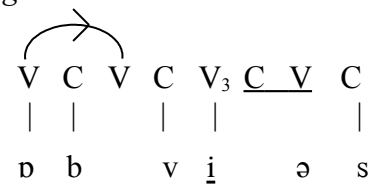
(30) high vowel gliding

gradient	[ˈgreɪd{i/j}ənt]	gradual	[ˈgrædʒ{u/w}əl]
ambient	[ˈæmb{i/j}ənt]	actual	[ˈæktʃ{u/w}əl]
obvious	[ˈɒbv{i/j}əs]	annual	[ˈænj{u/w}əl]
nucleus	[ˈnjuːkl{i/j}əs]	affluent	[ˈæfl{u/w}ənt]
vitriol	[ˈvɪtr{i/j}əl]	congruous	[ˈkɒŋgr{u/w}əs]
requiem	[ˈrɛkw{i/j}əm]	vacuum	[ˈvækj{u/w}əm]

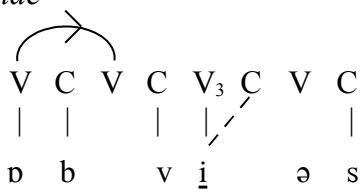
• after any type of C (even /r j w/) or C cluster (coda-onset, bogus, complex onset) ⇒ the resulting glide cannot form a complex onset

(31) representation of gliding

(a) *high vowel*



(b) *glide*



• condition: following vowel is a /ə/ ⇒ empty CV-unit
• glide: like a syllabic C ⇒ distributional freedom

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