English Phonetics-II

4. The English syllable

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Lecture outline

- The syllable. Definition
- The syllable as a phonetic unit
- The syllable as a phonological unit. Pulgram's principles.
- Syllabic constituents
- English phonotactics
  - The onset
  - The nucleus
  - The coda
- Syllable division. Phonological rules
  - Wells' rules

L.Carroll: Through the Looking Glass

'Twas brillig, and the slithy toves
did gyre and gimble in the wabe,
all mimsy were the borogoves,
and the mome raths outgrave.
    "Beware the jaberwock, my son!
    the jaws that bite, the claws that catch
    beware the jubjub bird and shun
    the frumious bandersnatch!"
He took his vorpal sward in hand:
longtime the manxome foe he sought
so tested he by the tumtum tree
and stood a while in thought

1. THE SYLLABLE AS A PHONETIC UNIT

◆ **Acoustically:**
  ◆ single peak of prominence (but weak sounds? E.g.come and see. Is French pseudosyllabic? - Hjelmslev)
◆ **Articulatorily:**
  ◆ Chest pulse theory (Stetson):single opening/closing of vocal tract. –rejected by Abercr. Also difficulty with sequences like 'seeing' /Hoy he oído…etc.

Working **phonetic definition** : "a syllable consists of a *centre* and *margins* . The centre has little or *no obstruction to airflow* and *sounds comparatively loud* . The *margins* (before and after the centre) involve *greater obstruction to airflow* and *less loudness"*

2. SYLLABLE SPLITTING

- Pulgram's principles (1970)
  - Maximal open syllable: e.g. mi-stake
  - Minimal coda + maximal onset: tran-scribir
  - Irregular coda: trans-cribir

ASSUMPTION: syllable and word have same sequential constraints

3. PHONOTACTICS

The branch of phonology that studies:
- the permissible strings of phonemes in a language within syllables,
- the *constraints on* the *number of segments* which can appear in the onset, nucleus and coda
- the rules governing the possible sequences of consonants ('clusters') allowed in a system (i.e. *which possible segments* can occur in a given position and in *what combinations).*
- In English, words can be monosyllabic (e.g. *glimpsed*), bisyllabic (e.g. *careful*), trisyllabic (e.g.*discussion*) or polysyllabic (e.g. *competitiveness*).
- ***Note: the syllable has fuzzy borders*** (e.g. *student,* one or two syllables?

4. THE SYLLABLE: ITS CONSTITUENTS

The syllable as a structural unit:

Syllable structure

- **Onset (O):** includes any consonants (conventionally represented as C) that precede the nuclear element

- **Coda (Co):** includes any consonants that follow the nuclear element

- **Nucleus (N):** occupied by vowels (conventionally represented as V) or syllabic consonants. Syllabic = occupying the nuclear element (i.e. N). Non-syllabic = occupying the margins (i.e. O and Co)

'talk'
tɔːk
Syllable
Onset   Rhyme
         Nucleus Coda
C   V   C
t   ɔː   k
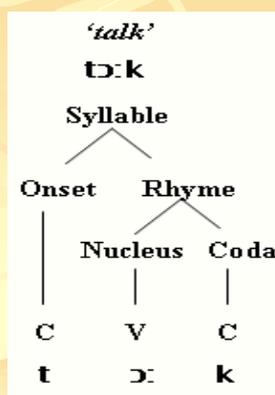
5. ENGLISH AND SPANISH SYLLABIC STRUCTURE

Syllable type	Number of instances	Example
V	11	E
CV	178	to
VC	111	at
CVC	1,978	tot
VCC	160	eats
CCV	98	stir
CVCC	2.845	socks
CCVC	1.069	stack
VCCC	34	arks
CCCV	12	straw
CCVCC	1.423	steaks
CVCCC	622	barks
CCCVC	135	sprig
CCVCCC	252	spanks
CCCVCC	161	sprigs
CVCCCC	8	sixths
CCCVCCC	15	sprints
CCVCCCC	4	sphinxed

* Taken from Moser (1957). C is a consonant; V is a vowel . .

6. ENGLISH PHONOTACTICS: THE ONSET

- 0 Cs
- 1 C (**except ŋ, ʒ - only in loanwords**: *genre, gigolo..*

- **2 C clusters**

- **3 C clusters (see next transp.**

Initial C	Post-initial C (plosives, fricatives, nasals, laterals)				
	/p/	/t/	/k/	/f/	/v/
	spɪl	stɪl	skɪl	sfɪə	?
/s/					
	/m/	/n/	/w/	/j/	/r/
	smaɪl	sneɪl	swɪm	sju:	?

6.1 TWO C CLUSTERS-1

— 2-C clusters: examples
C + approximant
(restrictions on
homorganic clusters
when C is a plosive)

Initial C (nasals, laterals)	Post-initial C (approximants)			
	/l/	/r/	/w/	/j/
/m/	—	—	—	mju:l
/n/	—	—	—	nju:
/l/	—	—	—	lju:d

Initial C (plosives)	Post-initial C (approximants)			
	/l/	/r/	/w/	/j/
/p/	pleɪ	prɔ:	—	pjɔ:
/b/	blu:	brɪŋ	?	'bju:ti
/t/	—	treɪ	twɪn	tju:n
/d/	—	drɔ:	dwel	dju:
/k/	klu:	gru:	kwɪk	kju:
/g/	glu:	kru:	?	?

'bwa:nə,
gwen
gju:lz

6.2 TWO C CLUSTERS-2

— 2-C clusters: examples

Initial C (fricatives)	Post-initial C (approximants)			
	/l/	/r/	/w/	/j/
/f/	fluː	friː	—	fjuː
/v/	—	—	—	vjuː
/θ/	—	θruː	θwɔːt	ɪnˈθjuːz
/s/	sluː	?	swɪm	sjuː
/ʃ/	?	ʃruː	?	—
/h/	—	—	—	hjuː

ʃwaː ʃweps ˈʃwɔːtsənegə
ˈʃliːmən nemˈilʃ ˈʃlesɪndʒə

6.3 THREE C CLUSTERS-3

- 3-C clusters: examples

— /s/+ C + approximant

Initial C	Post-initial C	Legal 2-C			
		Final C (approximant)			
		/l/	/r/	/w/	/j/
/s/	/p/	splɪt	sprɪŋ	—	spjuː
	/t/	—	strɪŋ	—	stjuː
	/k/	?	skriːm	skwɪʃ	skjuː
	/f/	—	?	—	—
	/m/	—	—	—	?

sklə'rəʊsɪs sfrə'dʒɪstɪks   smjuː

6.4 ONSET RARE CLUSTERS

— ʧ ʤ ð ʒ ŋ never found in initial 2-C or 3-C clusters

— Rare clusters can be found, often in loanwords

/ʃ/ + nasal/plosive/fricative

		plosive + fricative	
/ʃmɪt/	Schmidt	/tsuˈnaːmi/	tsunami
/ˈʃnaɪdə/	Schneider	/pʃɔː/	pshaw
/ʃtʊp/	schtup		
/ˈʃvaːtskɒpf/	Schwarzkopf		

7. THE NUCLEUS. PHONOTACTIC RESTRICTIONS

Nucleus + Coda restrictions:
- In English –unlike Spanish- not all vowels are eligible as nuclear elements if the syllable consists of just the nucleus (the only compulsory element).
- Onset + Nucleus restrictions:
  - if there is a C in the onset, all vowels are allowed as nucleus except /ʊ/. /uː/ is rare (e.g. ooz oodles).
  - /aʊ/ can stand on its own. It a C follows, it can only be a dental, an alveolar or a post-alveolar C segment (e.g. *mouth, mouse, vouch*).
  - Only certain vowels are allowed if the syllable is unstressed/stressed and if it is followed or not by a consonant in the Coda.

7.1 VOWEL RESTRICTIONS

phonotactics of vowels in English

stressed syllables	unstressed syllables
Allowed only if followed by a consonant ɒ ʌ e æ ɪ ʊ	Allowed only if followed by a consonant ɒ ʌ e æ
Allowed even if not followed by a consonant iː ɔː uː ɜː ɑː All diphthongs	Allowed even if not followed by a consonant ɪ ʊ ə i u
Not allowed at all ə i u	Only allowed in unstressed syllables ə i u

8. SYLLABIC CODA

Phonotactic facts about the Coda (Co):

- 0 C. (e.g. fee, say)

- 1 C: any except /w/, /j/, /h/.

- /r/ only allowed if the following sound is a vowel and never word-finally in non-rhotic accents.

8.1. 2 Cons ENGLISH CODAS-1

5.1. Clusters-a

─ 2-C clusters: examples

Accent type	E.g.	Sample word 'start'	Syllable template
Rhotic	GA	/staːrt/	CCVCC
Non-Rhotic	RP	/staːt/	CCVC

	PLOSIVES & AFFRICATES		FRICATIVE		NASAL
	voiceless	voiced	voiceless	voiced	
LATERAL	/lp/ help	/lb/ bʌlb	/lf/ ʃelf	/lv/ delv	/lm/ elm
	/lt/ belt	/ld/ əʊld	/lθ/ fɪlθ	/lð/ ?	/ln/ (rare)
	/lk/ desk	/lg/ ?	/ls/ els	/lz/ iːlz	kɪln
	/ltʃ/ beltʃ	/ldʒ/ bʌldʒ	/lʃ/ welʃ	/lʒ/ ?	/lŋ/ NO

8.2. 2 Cons ENGLISH CODAS-2

5. 2 Clusters-b

─ 2-C clusters: examples

	PLOSIVES & AFFRICATES		FRICATIVE	
	voiceless	voiced	voiceless	voiced
NASAL	/mp/ læmp	/mb/ (not allowed)	/mf/ nɪmf	/v/ ?
	/nt/ bent	/nd/ hænd	/nθ/ tenθ	/ð/ ?
	/ŋk/ pɪŋk	/ng/ sɪŋ	/ns/ rɪns	/mz/ bɒmz
		(in a few accents)		/nz/ brɒnz
				/ŋz/ sɒŋz
	/ntʃ/ lʌntʃ	/ndʒ/ spʌndʒ		
			/nʃ/ lʌnʃ (1)	/ʒ/ ?

1. Also lʌndʒ

8.3 2 Cons ENGLISH CODAS-3

5.3 Clusters-c

— 2-C clusters: examples

	PLOSIVE		FRICATIVE	
	voiceless	voiced	voiceless	voiced
PLOSIVE & AFFRICATE	/pt/ æpt /kt/ ækt /tʃt/ wɒtʃt	/bd/ rɒbd /gd/ lægd /dʒd/ eɪdʒd	/ps/ læps /ts/ blɪts /ks/ fɒks	/bz/ kʌbz /dz/ ædz /gz/ bʌgz
FRICATIVE	/sp/ lɪsp /st/ pɑːst /sk/ rɪsk /ft/ left /ʃt/ wɒʃt	/zd/ iːzd /vd/ lɪvd /ʒd/ (rare) /ðd/ bɑːðd	/fθ/ fɪfθ /fs/ pʌfs /θs/ mɒθs	/vz/ lʌvz /ðz/ briːðz

8.4 THREE C- CLUSTERS

Phonotactic facts about the Coda (Co):

❑ 3-C clusters: Many 3-C clusters created after the addition of a suffix (CC+C) as in 'band+s', or two suffixes (C+C+C) as in 'fif+th+s') but not all (e.g. 'glimpse').

❑ The last consonant is always /t, d, s, z, θ/ and always agrees in voicing with the previous consonant.

8.5 FOUR C- CLUSTERS

- All 4-Cons. clusters contain at least one morpheme boundary:
  CC+C+C(*'twelfths'*, *'thousandths'*) CCC+C (e.g. *'prompts'*, *'glimpsed'*).
- The last consonant is always a suffix and the last two C are always voiceless (this means the last C is always either /s/ or /t/)
- The longer a final cluster becomes, the more of a tendency for elision, esp. in connected speech.

9. PHONOLOGICAL SYLLABLE RULES (J. Wells, 94)

Relevance of syllable boundaries

- /r/ ALLOPHONY: ear ring vs her ring. *Your eyes vs. your rice.*
- ASPIRATION: plum pie vs plump eye. *At Acton vs. a.ttack.*
- PRE-FORTIS CLIPPING: *feature vs. fee-paying. Happy vs slab.*
- T-TAPPING: *butter vs my tie.*
- T-GLOTTALING: (unless a vowel or /l/, /n/ follows/or precedes an obstruent): *Gatwick vs. atomic.*
- PLOSIVE EPENTHESIS: *fence|...nts/ vs. inside.*
- T/D ELISION: *first-rate* vs. *mistress* .

9.1   ENGLISH SYLLABIFICATION RULE
–J. Wells, 94)

FUNDAMENTAL RULE:

"*Subject to certain conditions, consonants are syllabified with the more strongly stressed of the two flanking syllables*".

packet= pack it

happy, party, ready.

banker, dolphin, cri sis

"*Where adhacent syllables are of equal rank, consonants are (again subject to the stated conditions) syllabified with the leftward syllable*"
first-rate vs. *mistress* .

9.2 THE PHONOTACTIC CONDITION

- "Phonotactic constraints on syllable structure (as established with reference to monosyllables) are not violated" (Wells, 94)
  - This condition blocks the operation of the Fundamental Rule.

    *En.glish, but chand.ler   tim.ber (no * -/mb/ final*

    pleas.ure   tum.bler   Mar.y
  - Short Vs? no.stalg.ic   po.ster.ior   ca.coph.ony

    "they are not absolutely precluded in unstressed syll.

9.2.1 PHONOTACTIC CONSTRAINTS

8. Phonotactic constraints on syllable structure (as established with reference to monosyllables) are not violated"

- Common syllabification principles: 'extra' & 'language' (revisited), and 'panther'

		against the phononactic constraint since
		'pæ.nθə
'panther'	A.	no syllable begins with /nθ/
	B.	no syllable ends in /æ/
		'ekstr.ə 'e.kstrə
'extra'	A.	no syllable ends in /kstr/
	B.	no syllable begins with /kstr/
		'læ.ŋgwɪdʒ 'læŋgw.ɪdʒ
'language'	A.	no syllable ends in /æ/
	B.	no syllable begins with /ŋgw/
	C.	no syllable ends in /ŋgw/

9.3 THE MORPHEME BOUNDARY CONDITION

"In polymorphemic words, consonants belong to the syllable appropriate to the morpheme of which they form a part. This applies only to synchronic , psychologically real morphemes" (Wells, 94).

Rom.an   bon.us   bigg.er   hors.es ...

- Morpheme boundaries block the operation of main rule:

 re.print   pre.su.ppose

9.4 THE AFFRICATE CONDITION

- "Affricates (i.e. /tr/, dr, ts, dz) are not split between syllables, but are treated as indivisible"

  teach.er   a.llerg.ic   cou.rag.eous

  petr.ol   mattr.ess   squadr.on   bedr.oom entr.y

SELF-SNAGS:

- 1. ac.cel.er.ate or --rate? (Wells prefers the first)
- 2. /I/ is ambiguous (unstressed full or weak vowel?) arm.ist.ice or ---i.stis (consonant-capturing)? pol.it.ics or --i.tics? (the second in Aust./USA).
- 3.Ambisyllabicity? be-tt-er ? ("Not a useful concept" - Wells)
- So rather than CV.CV, in English at least, preference for a syllatic structure of the type CVC.V.

10. SYLLABLE DIVISION: THE EPD's POLICY

- Adheres to the 'Maximal Onset Principle' : consonants are assigned to the onset provided English phonotactics is not violated (e.g. con-stit-u-ent, bett-er -but bea-ter).
- 'Privilege of occurrence': unstressed ɪ and ʊ same privilege as /ə/ when a consonant follows: de-vel-op
- Word boundaries are not violated: hard-ware, not har-dware.

  Compare LPD (.) with EPD (|)
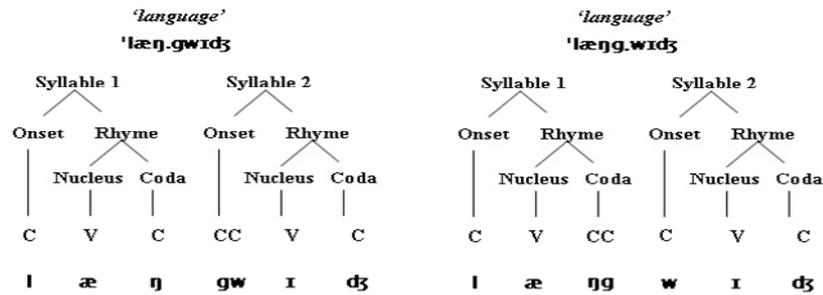
  tea|ch.er   a.ller|g.ic   cou.ra|g.eous

  pet|r.ol   mat|tr.ess   squad|r.on   bed|r.oom en|tr.y

  ac.cel.e|r.ate or --rate? (Wells prefers the first)

  arm.i|st.ice or ---i.stis pol.i|t.ics or --i.tics?

NOTE: " No complete satisfactory scheme of syll. division can be produced- all sets of rules will throw up some cases which cannot be dealt with properly" (EPD, xiii)

10.1 SYLLABIFYING IN ENGLISH-1

7.4.1. Example-a
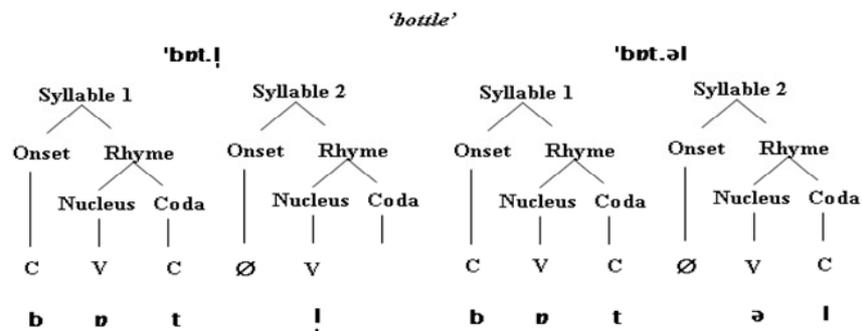
- Common syllabification principles: 'language'

'language'
ˈlæŋ.gwɪdʒ

	Syllable 1		Syllable 2	
Onset	Rhyme	Onset	Rhyme	
	Nucleus Coda		Nucleus Coda	
C	V C	CC	V C	
l	æ ŋ	gw	ɪ dʒ	

'language'
ˈlæŋg.wɪdʒ

	Syllable 1		Syllable 2	
Onset	Rhyme	Onset	Rhyme	
	Nucleus Coda		Nucleus Coda	
C	V CC	C	V C	
l	æ ŋg	w	ɪ dʒ	

LPD (2ⁿᵈ ed. 2000 by Wells)
EPD (17th ed. 2006 by
Roach, Hartman & Setter)

10.2 SYLLABIFYING IN ENGLISH-2

7.4.2 Example-b

- Common syllabification principles: 'bottle'

'bottle'
ˈbɒt.l̩

	Syllable 1		Syllable 2	
Onset	Rhyme	Onset	Rhyme	
	Nucleus Coda		Nucleus Coda	
C	V C	Ø	V	
b	ɒ t		l̩	

'bottle'
ˈbɒt.əl

	Syllable 1		Syllable 2	
Onset	Rhyme	Onset	Rhyme	
	Nucleus Coda		Nucleus Coda	
C	V C	Ø	V C	
b	ɒ t		ə l	

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