Linguistic Change and Prosodic Typology

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Strasbourg Oaths / Serments de Strasbourg / Strassburger Eide, 14 February 842 :

Alliance of two brothers, Charles the Bald et Louis the German, against their older brother Lothair. Parallel texts Old French (OF) / Old High German (OHG).

Louis the German declares in (paleo) OF:

> Pro Deo amur et pro christian poblo et nostro commun saluament, d'ist di in auant, in quant Deus sauir et podir me dunat, si saluarai eo cist meon fradre Karlo, et in adiudha et in cadhuna cosa si cum om per dreit son fradra saluar dift, in o quid il mi altresi fazet. Et ab Ludher nul plaid nunquam prindrai qui meon uol cist meon fradre Karle in damno sit.

Charles the Bald declares in OHG:

> In godes minna ind in thes christiānes folches ind unsēr bēdhero gehaltnissī, fon thesemo dage frammordes, sō fram sō mir got gewizci indi mahd furgibit, sō haldih thesan mīnan bruodher, sōso man mit rehtu sīnan bruodher scal, in thiu thaz er mig sō sama duo, indi mit Ludheren in nohheiniu thing ne gegango, the mīnan willon imo ce scadhen werdhēn.

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Phonetic transcription:

[pro ˈdɛə aˈmor e pro ˈkristjan ˈpɔblə e ˈnɔstrə koˈmun salvaˈmɛnt ˈdɛst ˈdi en aˈvant en ˈkant ˈdɛəs saˈver e poˈðer mə ˈdonat ˈsi salvaˈraˌi ˈɛə ˈtsest məon ˈfraðrə ˈkarlə eð en aˈjuða eð en kaˈðuna ˈkɔza ˈsi ˈkom ˈɔm pər ˈdreˌit son ˈfraðrə salˈvar ˈdeft en ˈɔ keð ˈil ˈmi altreˈsi ˈfatsət eð a loˈðer ˈnul plaˌit ˈnonka prenˈdraˌi ˈki məon ˈvɔl ˈtsest məon ˈfraðrə ˈkarlə en ˈdamnə ˈset]
(following Hall 1953)

Translations in French and in German :

« Pour l'amour de Dieu et pour le peuple chrétien et notre salut commun, à partir d'aujourd'hui, autant que Dieu me donnera savoir et pouvoir, je secourrai ce mien frère Charles par mon aide et en toute chose, comme on doit secourir son frère, selon l'équité, à condition qu'il fasse de même pour moi, et je ne tiendrai jamais avec Lothaire aucun plaid qui, de ma volonté, puisse être dommageable à mon frère Charles. »

« Pour l'amour de Dieu et pour le salut du peuple chrétien et notre salut à tous deux, à partir de ce jour dorénavant, autant que Dieu m'en donnera savoir et pouvoir, je secourrai ce mien frère, comme on doit selon l'équité secourir son frère, à condition qu'il en fasse autant pour moi, et je n'entrerai avec Lothaire en aucun arrangement qui, de ma volonté, puisse lui être dommageable. »

2nd text in German:
„Aus Liebe zu Gott und um des christlichen Volkes und unser beider Heil von diesem Tage an in Zukunft, soweit Gott mir wissen und Macht gibt, will ich diesem meinem Bruder helfen, wie man von Rechts wegen seinem Bruder helfen soll, unter der Voraussetzung, dass er mir dasselbe tut; und mit Lothar will ich auf keine Abmachung eingeben, die mit meinem Willen diesem meinem Bruder schaden könnte.“

Percentage of closed syllables

text in :	number of syllables	number of open syllables	number of closed syllables	**percentage of closed syllables**
OF	106	55	51	**48.1 %**
OHG	102	52	50	**49.0 %**
Modern French	102	77	25	**24.5 %**
Modern High German	102	30	72	**70.2 %**

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- percentage of closed syllables is more or less equal in OF and OHG
- marked difference between Modern French and Modern German

Phonetic specificities of (Paleo) Old French text

Pro Deo amur et pro christian poblo et nostro co**mm**un saluament, d'ist di in auant, in quant Deus sauir et podir me dunat, si saluarai eo cist meon fradre Karlo, et in adiudha et in cadhuna cosa si cum om per dreit son fradra saluar dift, in o quid il mi altresi fazet. Et ab Ludher nul plaid nunquam prindrai qui meon uol cist meon fradre Karle in damno sit.

[pro ˈdɛə aˈmor e pro ˈkristjan ˈpɔblə e ˈnɔstrə koˈmun salvaˈmɛnt ˈdest ˈdi en aˈvant en ˈkant ˈdɛəs saˈver e poˈðer mə ˈdonat ˈsi salvaˈraˌi ɛ́ə ˈtsest məon ˈfraðrə ˈkarlə eð en aˈjuða eð en kaˈðuna ˈkɔza ˈsi ˈkom ˈɔm pər ˈdreˌit son ˈfraðrə salˈvar ˈdeft en ˈɔ keð ˈil ˈmi altreˈsi ˈfatsət eð a loˈðer ˈnul plaˌit ˈnonka prenˈdraˌi ˈki məon ˈvɔl ˈtsest məon ˈfráðrə ˈkarlə en ˈdamnə ˈset]
(following Hall 1953: 317-321)

Specificities :
- no geminates, no long vowels ➔ no length opposition, neither for consonants, nor for vowels
- omnipresence of vowels that have been reduced to schwa [ə]
- Intervocalic Latin [d] has spirantized to [ð] (has disappeared altogether later on)

Phonetic *specificities* of OHG text

In godes mi**nn**a ind in thes christiānes folches ind unsēr bēdhero gehaltni**ss**ī, fon thesemo dage fra**mm**ordes, sō fram sō mir got gewizci indi mahd furgibit, sō haldih thesan mīnan bruodher, sōso man mit rehtu sīnan bruodher scal, in thiu thaz er mig sō sama duo, indi mit Ludheren in no**hh**einiu thing ne gegango, the mīnan wi**ll**on imo ce scadhen werdhēn.

- geminates present (but they have disappeared later on)
- presence of long vowels

➔ Hence: length oppositions, for both vowels and consonants

➔ No reduced vowels (but they appeared later on in the history of German)

Central thesis:

(i) The properties presented above:

- presence/absence of length opposition (especially those in consonants and unstressed vowels)
- vowel reduction, lenition of intervocalic consonants
- differences in syllable structure

are by no means isolated facts, but are linked to the **prosodic organisation, or system** of the languages

(ii) The prosodic system of a language can change. This can bring about changes in the characteristics that depend on it.

(La - *prosodie* – au sens large – concerne les éléments de la parole qui se trouvent au dessus du niveau des segments, comme la syllabe et les éléments plus grands.)

Prosodic typologies that have been proposed in the past

Classic typology: **isochrony**

Syllable-timed languages versus **stress-timed** languages (Pike 1945, Abercrombie 1967)
(Langues à **isochronie syllabique** vs. langues à **isochronie accentuelle)**

Essence of this typology:

Syllable-timed languages: the temporal space between all **syllables** is equal. Examples (according to the authors): Spanish, French.

Stress-timed languages: the temporal space between all **stressed syllables** is equal. Examples (according to the authors): English, Arabic.

syllable-timed languages vs. stress-timed languages) (Pike 1945, Abercrombie 1967)

This typologie has been **refuted by phonetic measurements**
(Roach 1982; Wenk & Wioland 1982; Fant, Kruckenberg & Nord 1991)

Illustration: French, Telugu et Yoruba: quoted as being syllable-timed languages
English, Russian et Arabic: quoted as being syllable-timed languages

(1) Standard deviation (ms) for syllable duration (Roach 1982:74):

French:	75.5	English:	86
Telugu:	66	Russian:	77
Yoruba:	81	Arabic:	76

We see that, for French and Yuroba the standard deviation of the syllable durations is not significantly smaller, than that of English, Russian and Arabic.

(Some other typologies have been proposed:

- Donegan & Stampe (1983) (syllable-rhythm vs. word-rhythm; categorial distinction, problematic as shown by Auer 1993:12-19)
- Gil (1986) (distinction iambic vs. trochaic languages)
- Pulgram (1970) (word languages, nexus languages, cursus languages))

- Dauer (1983, 1987):

  "…. the rhythmic differences we feel to exist between languages such as English and Spanish are more a result of phonological, phonetic, lexical, and syntactic facts about that language than any attempt on the part of the speaker to equalize interstress or intersyllable intervals" (1983:55).

Dauer takes **stress** as basis: distinction between **syllabes counting** languages vs. **stress counting** languages

Syllable languages vs. word languages

A typology inspired by Dauer's typology was proposed by Auer (1993, 2001).

Instead of the concept of isochrony of a (dichotomic) typology, Auer proposes a **continuum** going from the **syllable language** type to the **word language** type.

For this, he takes the prosodic hierarchy by Nespor & Vogel 1986 as a basis.

Syllable vs. Word languages

Instead of the concept of isochrony of a (dichotomic) typology, Auer proposes a **continuum** going from the **syllable language** type to the **word** language type. For this, he takes as a base the prosodic hierarchy by Nespor & Vogel 1986 as a basis.

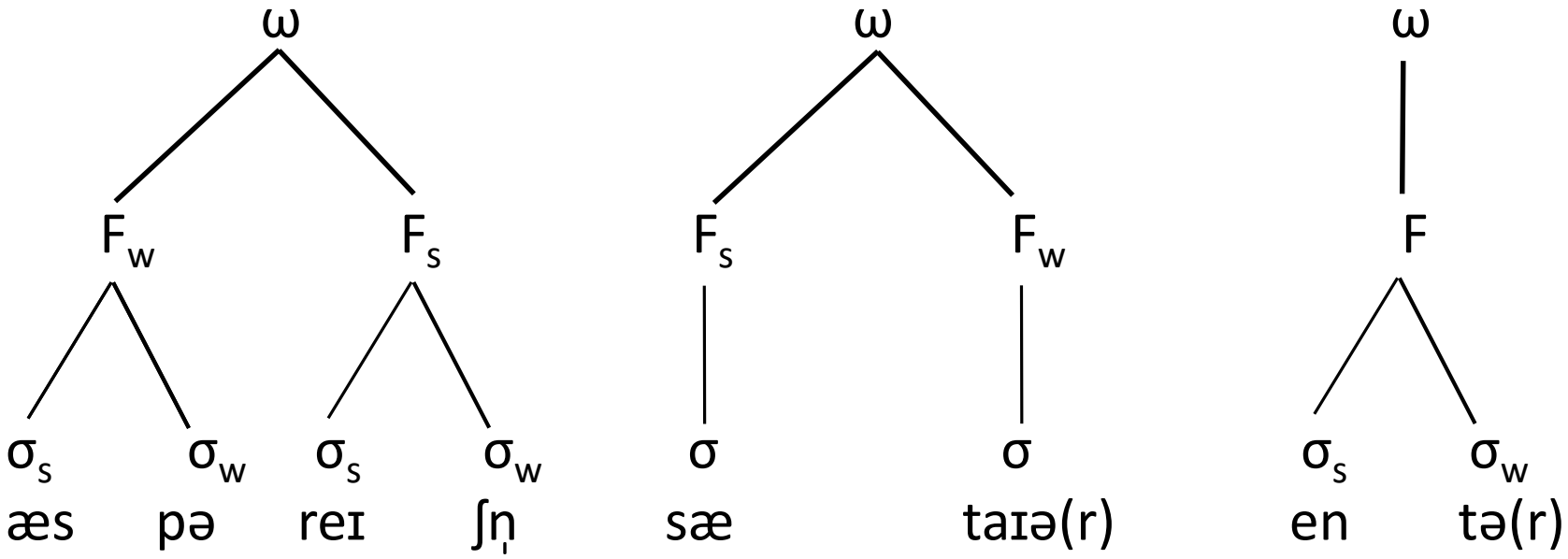
(3) prosodic hierarchy (Nespor & Vogel 1986)

Phonological Utterance	(U)	
Intonational Phrase	(I, IP)	
Phonological Phrase	(φ)	
Clitic Group	(C)	
Phonological Word	(ω)	(or : *Prosodic* Word)
Phonological Foot	(F)	
Phonological Syllable	(σ)	
(Mora	(μ))	

Syllable languages vs. word languages

foot (F): either bounded : 1,2 or (sometimes) 3 syllables, or unbounded (mod. French)
phonological word (ω): contains one or more feet.

(4) Examples (s=strong, w=weak)

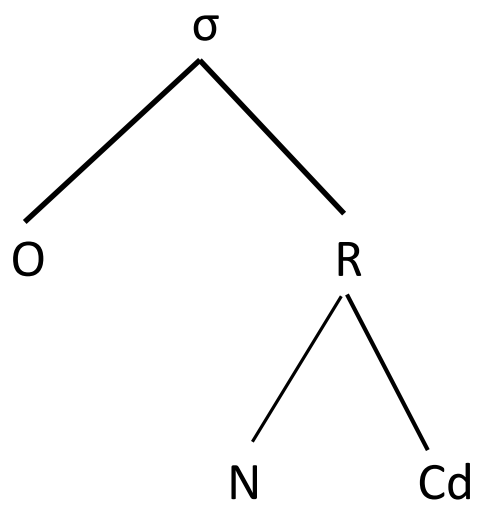


[ˌæspəˈreɪʃn̩] aspiration [ˈsæˌtaɪə(r)] satire [ˈentə(r)] enter

Syllable languages vs. word languages

Tendency to optimize syllables (dominant in syllable languages)
- from the perspective of the number of segments
- from the perspective of sonority

(5)



σ = syllable
O = onset (attaque)
R = rhyme
N = nucleus (noyau)
Cd = coda

(6) Sonority or consonantal strength scale

← increasing sonority					increasing consonantal strength →				
a	e	i	r	l	m	v	f	b	p
	o	u			n	z	v	d	t
	ø	y			ɲ	ʒ	s	g	k
					ŋ	ɣ	x		
open vowels	mid vowels	closed vowels	- liquids -		nasals -	voiced - fricatives	voiceless - fricatives	voiced - stops	voiceless stops

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					ŋ	ɣ	x		
open vowels	mid vowels	closed vowels	-	liquids	- nasals	- voiced fricatives	- voiceless fricatives	- voiced stops	- voiceless stops

(7) Vennemann 1986a,b: syllable preference laws

a. **Head** (= onset) **law**

A syllable onset is the more preferred:

(a) the closer the number of speech sounds in the head is to one,
(b) the greater the Consonantal Strength value of its onset, and
(c) the more sharply the Consonantal Strength drops from the onset toward the Consonantal Strength of the following syllable nucleus.

Hence: (a) ***p****a* is preferable to ***pr****a* and to *a (in this latter case the onset is empty);*
(b) ***p****a* is better than ***r****a*
(c) ***p****a* is better than ***p****i* which, in its turn, is better than ***p****l̩* (*p* + syllabic *l*)

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open vowels	mid vowels	closed vowels	-	liquids	- nasals	- voiced fricatives	- voiceless fricatives	- voiced stops	– voiceless stops

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b. **Coda Law**

A syllable coda is the more preferred:

(a) the smaller the number of speech sounds in the coda,
(b) the less the Consonantal Strength of its offset, and
(c) the more sharply the Consonantal Strength drops from the offset toward the Consonantal Strength of the preceding syllable nucleus.

Hence: (a) *pa* est preferred to *pa**m*** and to *a (in the first case the coda is empty); pa**m*** is better than pa**lm**
(b) *pa**m*** is better than *pa**p***
(c) *pa**m*** is better than *pi**m***, which in its turn, is better than *p*̩***m*** (*p* + syllabic *l* + *m*)

(6) Sonority or consonantal strength scale

← increasing sonority					increasing consonantal strength →				
a	e	i	r	l	m	v	f	b	p
	o	u			n	z	v	d	t
	ø	y			ɲ	ʒ	s	g	k
					ŋ	ɣ	x		
open vowels	mid vowels	closed	-	liquids	- nasals	- voiced fricatives	- voiceless	- voiced stops	– voiceless

(7) Vennemann 1986a,b: syllable preference laws.

c. **Nucleus Law**

A nucleus is the more preferred:

(a) the steadier its speech sound, and
(b) the less the Consonantal Strength of its speech

Hence: pa > po > pu > pr̥ > pn̥ > ps̥ > pk̥ (x > y = “x is preferred to (is better than) y”)

(6) Sonority or consonantal strength scale

← increasing sonority					increasing consonantal strength →				
a	e	i	r	l	m	v	f	b	p
	o	u			n	z	v	d	t
	ø	y			ɲ	ʒ	s	g	k
					ŋ	ɣ	x		
open vowels	mid vowels	closed vowels	-	liquids	- nasals	- voiced fricatives	- voiceless fricatives	- voiced stops	– voiceless stops

(7) Vennemann 1986a,b: syllable preference laws.

d. **Contact Law**

A syllable contact A$B is the more preferred, the less the Consonantal Strength of the offset A and the greater the Consonantal Strength of the onset B; more precisely - the greater the characteristic difference CS(B)-CS(A) between the Consonantal Strength of B and that of A.

Hence: a.pa > a.na > ar.na ; an.dra > an.ra

./..

(6) Sonority or consonantal strength scale

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a	e	i	r	l	m	v	f	b	p
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	ø	y			ɲ	ʒ	s	g	k
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Hence: a.pa > a.ra > an.ra ; an.dra >an.ra

(8) intrusive consonants in the history of French:

Lat. *camera* [ˈka.me.ra] > [ˈka**m.r**ə] > [ˈka**m.b**rə] (> [ˈ**ʃã.b**ʁə] ‘room’)

bad better even better

(9) **Maximal Onset Principle** (many authors)

In a sequence of two syllables, consonants must be assigned to the onset of the second syllable, except if this would lead to a violation of universal of langue-specific constraint.

Hence: /ata/ a.ta *at.a
/apra/ a.pra *ap.ra *apr.a

But (in many languages): /atlas/ at.las *a.tlas (*tl* is not permitted as an onset)

Foot

A **foot** is a rhythmic and accentual unit. A foot can contain one or more syllables. If it contains more than one syllable, one of them is dominant.

A foot contains normally 1, 2 or maximally 3 syllables

However, for a certain typological group of language, among which French, it is supposed that the maximum number of syllables is greater. These languages have “unbounded feet” (but limited by higher prosodic constituents).

Phonological (or prosodic) **word** (PrWd, ω: phonological, prosodic word)

PrWd: constituent above the level of the foot.

PrWd: "the lowest constituent of the prosodic hierarchy which is constructed on the basis of mapping rules that make substantial use of **nonphonological** notions." (Nespor & Vogel 1986:107)

le PrWd ≠ the grammatical word.

The limits of the PrWd coincide with morphological boundaries (but not necessarily the other way round)

- A grammatical word can consist of several PrWd's, e.g. in compounds: *porte-manteau, car maker, greenhouse*
- But also: a PrWd can contain several grammatical words, e.g. in combinations of certain grammatical words with lexical words : {***cet homme***}$_{\omega}$, my {***brother's***}$_{\omega}$ swimming.

Phonological (or prosodic) **word** (PrWd, ω: phonological, prosodic word)

The motivation of the PrWd. The PrWd is the domain:

- of phonological rules and processes

  e.g. rules of harmony and syllabification

- phonotactic generalizations

  ex.: Du. {a**lb**um}$_{\omega}$ (obedience of the contact law) vs. *doopnaam* {doo**p**}$_{\omega}${**n**aam}$_{\omega}$ 'baptismal name' (contact law has not been obeyed: the sequence *p.n* violates this law)

- minimality constraints

  ex.: Dixon (1980): In many Australian languages, a word must contain at least two syllables.

  Raffelsiefen (1999) shows that there is a minimality constraint for the PrWd in English:
  [ə]^{l}tomic {atomic}$_{\omega}$ vs. [$_{l}$ej]^{l}moral {a}$_{\omega}${moral}$_{\omega}$

Morphological structure and syllabification in Dutch

(Syntactic) prefixed words, certain (syntactic) suffixed words, as well as compounds contain several PrWd's:

9 a. *uiteindelijk* /œyt+ɛɪndə+lək/ 'finally'
uit /œyt/ 'out', *einde* /ɛɪndə/ 'end', *-lijk* /lək/ 'ADJ' ; prosodic structure: {uit}$_{\omega}${eindelijk}$_{\omega}$
NL: [ˌœyt.ˈʔɛɪn.də.lək] BE: [ˌœy.ˈtɛɪn.də.lək]

b. *oneens* /ɔn+eːns/ {on}$_{\omega}${eens}$_{\omega}$ 'not agreeing' (adj.)
on- /ɔn/ *'*NEG*', eens* /eːns/ 'agreeing' ;
NL: [ˌɔn.ˈʔeːns] BE: [ˌɔ.ˈneːns]

c. *bergachtig* /bɛrɣ+ɑxtəx/ 'montagneux'
berg /bɛrɣ/ 'mont', *-achtig* /ɑxtəx/ 'ADJ' ; prosodic structure: {berg}$_{\omega}${achtig}$_{\omega}$
NL: [ˈbɛrx.ˌʔɑx.təx] (with final devoicing of /ɣ/→[x] in /bɛrɣ/) BE: [ˈbɛr.ˌɣɑx.təx]

NL: the PrWd is the domain for syllabification
BE: The PrWd is **not** the domain for syllabification: syllabic structure does not obey the limits of the PrWd (a kind of *enchaînement*)

NL Dutch: more of a word language, BE Dutch: more of a syllable language

NL Dutch: for the **listener,** it is **easier to decode** an utterance, because its morphology is well marked.
BE Dutch: for the **speaker** it is **easier to produce** an utterance, because its syllabic structure is more regular.

(10)

prosodic type:	syllable language	word language
optimization:	phonological syllable	phonological word
central aspect of communication:	ease of prononciation	ease of decoding
avantageous for:	the speaker	the listener

➔ In every communication system, there compromise (and a tension) between production and decoding. The exact location of this compromise varies from system to system, e.g. from language to language.

According to Von der Gabelentz (1891:256) there are two forces in the history of languages: the *Bequemlichheitstriebe* **'force of establishing ease'** and the *Deutlichkeitstriebe* '**force of establishing distinctiveness'**.

It follows from Vennemann's laws (and similar proposals) that the optimal syllable has the simple forms consonant-vowel – CV – with an empty coda: [ta] is the optimal syllable.

In the Dutch word : gete***rgdst*** /ɣə+tɛrɣ+d+st/ [ɣətɛ**rxtst**]* 'the most badgered'

rxtst is a very complex coda. According to many analyses, the sequence *tst* is 'extra-syllabic'. The sonority or consonantal strength scale in (6) (repeated here):

(6) Sonority or consonantal strength scale

← increasing sonority					increasing consonantal strength →				
a	e	i	r	l	m	v	f	b	p
	o	u			n	z	v	d	t
	ø	y			ɲ	ʒ	s	g	k
					ŋ	ɣ	x		
open vowels	mid vowels	closed	-	liquids	- nasals	- voiced	- voiceless	- voiced – voiceless	
						fricatives		stops	

is **violated** (*s* is less strong than *t*). This shows that Dutch cannot be a syllable language, because of its irregular syllable structure:

(but, for reasons mentioned above, Belgian Dutch is located more into the direction of a syllable language, on the continuous scale, than Dutch of the Netherlands).

The continuum syllable languages – word languages is expressed in a number of **opposite characteristics:**

1. - **Syllable languages** have predominantly **simple syllables** (of the CV type).
   - In **word languages**, **complex syllables** are frequent.
     In word languages, complex syllables are primarily found in stressed position and, thus, enhance the PrWd.

   Compare the word *getergde* /ɣə+tɛrɣ+d / [ɣə.ˈtɛrxd] ‘badgered’ (‘harcelé’) (CV.CVCCC) in Dutch where the stressed syllable ([tɛrxt]) is by far the more complex one.

2. - In word languages, syllabic structure is used to make **the stressed syllables** stand out from the **unstressed** ones.
   - Often in this type of language, all **non-stressed vowels are reduced to centralized ones, e.g.** [ə]. By this, the listener can rapidly identify the stressed vowels.
   - In word languages, *only* vowels in stressed syllables are form a rich system. Unstressed vowels often partially or totally neutralize.

Ex. of reduced vowels in Modern Dutch:

- the vowels in flexional morphemes are **exclusively schwa**.
  Verbal inflection: infinitive, plur.: *lach+*[**ə**]*n* ‘laugh’; preterit: *lach+t*[**ə**], past part.: *g*[**ə**]*+lach+*[**ə**]*n*;
  Nominal inflexion: plur. *mens+*[**ə**]*n* ‘people’; adjectival inflexion: *goed*+[**ə**] ‘goed’
- the vowels in a very large number of derivational morphemes are also **schwa**.
  Verbal prefixes: *v*[ə]*r-*, *b*[ə]-; nominal affixes: *g*[ə]- (nominalizer), -[ə]*r*, -*st*[ə]*r* (agent), *-(t)j*[ə] (diminutive); adjectival affix: -[ə]*r* (comparative), adverbial diminuative affix: *–tj*[ə]*s*
- the vowels in articles (and in weak forms of personal pronouns and many possesive pronouns) **have only schwa** as their vowel: *d*[ə], *(h)*[ə]*t,* [ə]*n, we, je, ge, ze, h’m, m’n, ‘(d)’r*

In present-day Dutch of the Netherlands, unstressed vowels of loan can easily be reduced to schwa.

Ex. lawaai l[ə]ˈwaai ’noise’; banaan b[ə]ˈnaan ‘banana’ proberen pr[ə]ˈberen ‘try’

This is not, or hardly, possible in Belgian Dutch.

This is a second indication that NL Dutch is more extremely a word language than BE Dutch.

Conversely, one finds in word languages often **diphthongized vowels** in stressed syllables. Hence, this is a strengthening of stressed vowels (making stressed vowels stand out).

Ex. In French (in the beginning of the Middle Ages, when it was a word language): Lat. *p*[**e**]*d(em)* → Fr. *p*[**je**]*d* 'foot'.

Poldernederlands. In Present-Day Dutch of the Netherlands:

- tendency to diphthongize long medial vowels: *mee* [meː] 'with' → [meːj], *ook* [oːk] 'also' → [oːwk].

Not in Flanders: this is a third indication that Dutch of the Netherlands is typologically more situated into the direction of a word language than Belgian Dutch.

- In syllable languages, **all vowels can appear in all syllables**. Hence, there is no distinction between stressed and non-stressed syllables. Hence, the limits of a PrWd are not easily perceptible.

Compare Spanish (a word language): *plata no es* 'this is not silver' with *platano es* 'this is a banana' (word game).

The continuum syllable languages – word languages is expressed in a number of **opposite characteristics:**

3. **Epenthesis en elision**

- In syllable languages: **in order to improve syllabic structure**

  Ex. In Modern French :
  - schwa deletion before vowels: *le homme* → *l'homme* /l**ə** + ɔm/ → [lɔm] 'the man'
  - syllable final obstruent deletion : *mai**s**tre* > *maitre 'master'* (or *maître* in obsolete, pre-1990, spelling)
  - homorganic glide insertion in hiatus position: *thé*[j]*atre*, *lou*[w]*er* 'to rent' (besides [lwe])
  - schwa epenthesis: film > film[ə]

  Ex. In Old High German (OHG) (syllable language)
  - harmonic vowel insertion: *burg* > *burug* 'castle'

The continuum syllable languages – word languages is expressed in a number of **opposite characteristics:**

3. **Epenthesis en elision**

- In word languages **in order to make the phonological word and morphological structure stand out**

  - consonant insertion in Early New High German (ENHG) *saf* > New High German (NHG) *saf**t*** ‘juice’
    eigenlich > *eigen*[**t**]*lich* ‘in reality’, *nieman* > *nieman*[**t**] ‘nobody’ (also in Middle Dutch)
    binding morpheme *s* in Dutch and German: *kwaliteit**s**controle, Qualität**s**kontrolle* ‘quality control’
    (*s*: originally a genitive marker)

  - vowel deletion in non-stressed syllables, with syllabic consonants as a result, NHG *oben,* [ˈoːb**ən**] > [ˈoːb**m̩**] ‘above’

  - apocope in Middle High German (MHG) *kelbere* [ˈkɛlbər**e**] > *Kälber* [ˈkɛlbər] ‘calves’ (or ‘calfs’, ‘veaux’)
    MHG -*ung**e*** [ʊŋə] (nominalising suffix) > NHG -*ung* [ʊŋ]
    Old English (OE) *nos**u*** > Middle English (ME) *nos**e*** *nos*[ə] > PDE (Present-day English) *nose* [nəʊːz] ‘nez’

The continuum syllable languages – word languages is expressed in a number of **opposite characteristics:**

4. Geminates (long consonants) can exist in syllable languages:

   like in italien (syllable language) *due anni* ([nː]) ‘two years’ vs. *due ani* ([n]) ‘two ashholes’

   But they became reduced in word languages as Old French (OF)

   Lat. *gutta* [tː] > OF *gota* [t] ‘goutte’ (etymologizing spelling)

   In word languages, one can find **ambisyllabic consonants**. They are short, but nevertheles belong to two syllables.
   E.g.: NHG *Mitte* [ˈmɪt̲ə] ‘centre’; Du. *midden* [ˈmɪd̲ən] ‘centre’ Engl. *butter* [ˈbʌt̲ɚ]

5. In word languages, **word stress** is clearly perceptible. In syllable languages, differences between stressed and non-stressed syllables are much less marked, or not marked at all. Some languages (French, Japanese) have no word stress at all.

The continuum syllable languages – word languages is expressed in a number of **opposite characteristics:**

6. In syllable languages one can find vowel harmony (assimilation between vowels at-a-distance). Exists a.o. in Italian dialects.

   OHG, a syllable language, had vowel harmony processes e.g. , **i-Umlaut** or **i-Metaphony,** which later became phonologized and morphologized (we already so the harmonizing epenthesis *burg* > *bur**u**g*)

   Word languages cannot have vowel harmony, because the non-stressed vowels are centralized or have disappeared altogether.

   However, there are remnants, morphologized processes like

   - Umlaut in Modern High German like in *Mann – Männer* [man] – [ˈmɛnəɐ] ‘man – men’.), the *i* which was the trigger of vowel harmony in OHG, has changed into *ə* in NHG.

   - Cf. also. Engl. *foot – feet,* [fʊt] – [fiːt] < OE *fot* – feti [fot] – [feti], *mouse –mice,* etc., where the trigger has totally disappered in PDE.

The continuum syllable languages – word languages is expressed in a number of **opposite characteristics:**

7. If there are **length oppositions** in vowels, these can exist:
   - in a syllable language: in **all** syllables
   - in a word language: in **stressed** syllables **only**

(7) Diagram of the phonological-typological evolution in High German (from Nübling et al. 2017:37)

← **syllable language**			**word language** →
OHG (500/750-1050 A.D)	MHG (1050-1350)	ENHG (1350-1650)	NHG (since 1650)
simple syllable structure	increase of syllable syllable coda complexity through apocope and syncope		high syllable coda complexity extrasyllabic elements
uniform vowel system in both stressed and non-stressed syllables	reduction of the vowel system in unstressed syllables to a single vowel		rich vowel system in stressed syllables, reduced vowel system in unstressed syllables
processes linked to syllables (like the second Germanic consonant shift)			
vowel epenthesis in order to avoid consonantal clusters		vowel epenthesis in order to create hiatus (*bur* > *Bau<u>e</u>r*)	
consonant epenthesis in order to prevent hiatus sequences		consonant epenthesis in order to create consonantal clusters	
geminates present	geminate reduction	genesis of ambisyll. consonants	ambisyll. consonants present
vowel harmony			no vowel harmony, but morphological umlaut

Table 1: prototypical properties of syllable versus word languages

nr.	*criterion*	*syllable languages* syllable as basic prosodic unit (foot length variable)	*word languages* phonological word as basic prosodic unit (syllable length variable)
1	*syllable structure*	CV syllables (rarely closed syllables); all syllables equally long	variable syllables type of different complexity, dependent on the stress position; often differences between medial and peripheral syllables
2	*syllable boundaries*	well defined, constant syllable boundaries	ill-defined, variable, speech-rate dependent syllable boundaries
3	*sonority hierarchy*	sonority hierarchy is obeyed, i.e. maximal sonority difference between C and V	sonority hierarchy is less obeyed, e.g. voicing of intervocalic plosives, assimilations (word internally).
4	*geminates*	geminates possible	geminate reduction, except in places where they are morphologically relevant, e.g. in internal compound boundaries e.g. German *Schifffahrt* [f:]
5	*stress effects*	no / few differences in structure of stressed vs. unstressed syllables	stressed syllables are heavy, unstressed syllables are light
6	*stress assignment*	mostly syllable based; absence of fixed word stress possible	stress assignment (often complex) is morphologically / lexically / semantically determined
7	*tonality*	can be present, also on unstressed syllables	if present (which is rarely the case), then only on stressed syllables

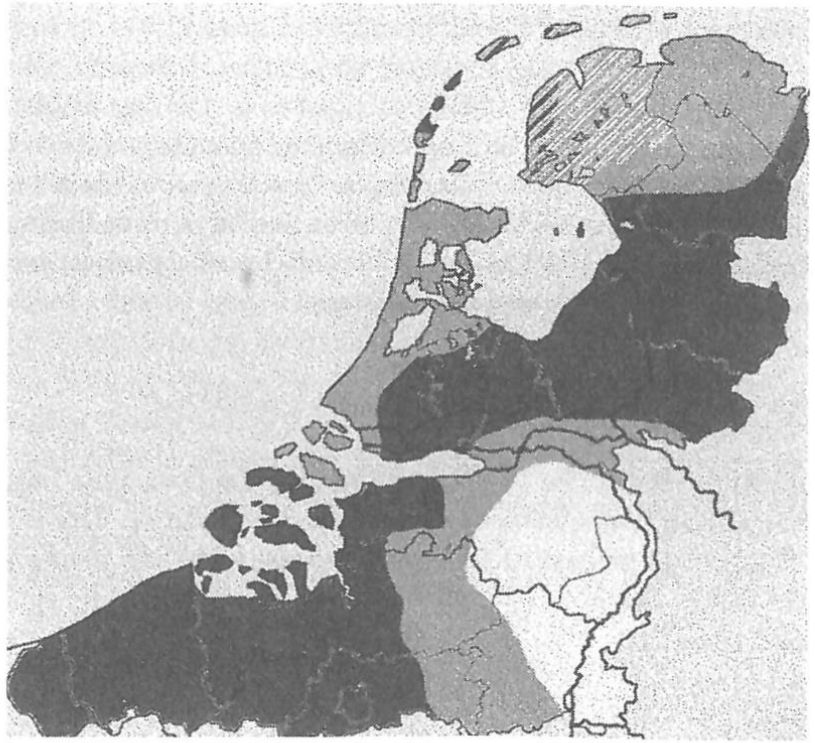
8	*phonotactics*	regular, stable phonotactics, no positionally determined allophones	word boundary (delimitative) signals positionally determined allophone (initial, medial, final) phonotactic restrictions
9	*vocalism*	little discrepancy between strongly and weakly stressed syllables, relatively equal tenseness.	strong discrepancy between strongly and weakly stressed vowels (German, Dutch, English). Heavy stress: often differences in length, diphthongiz. + centralizations (reductions) in unstressed syll.
10	*vowel harmony*	possible	rare
11	*vowel reduction and deletion*	because of reasons of syllable optimization	because of stress
12	*epenthesis*	for reason of syllable optimization, epenthetic *ə* in French film[ə]	if there is, then in order to let stand out morphemic structures like in German *saft, eigen-t-lich, namen-t-lich*, etc, bonding phoneme *s* in German and Dutch
13	*liaison*	yes (across morpheme boundaries)	no (border signals / junctures, e.g. glottal stop)
14	*sandhi*	external	internal
15	*consequences for morphology*	morphs that promote optimization of syllable structure	morphs that promote the information structure of words
16	*reanalyses*	reanalyses follow syllabic principles (Swed. *ni*, Lux. *mir*, *dir nis*)	reanalyses are not syllabically motivated (OHG *ni.mis.du* > *ni.mist* > NHD *nimmst*)

(adapted from Nübling & Schrambke 2004: 284-285)

Two more phenomena showing the difference between the northern and southern variant of Dutch (we have already seen: (i) syllabification non obeying phonological word limits in the South, (ii) productive vowel reduction in NL (iii) diphthongization of stressed mid long vowels in the North)

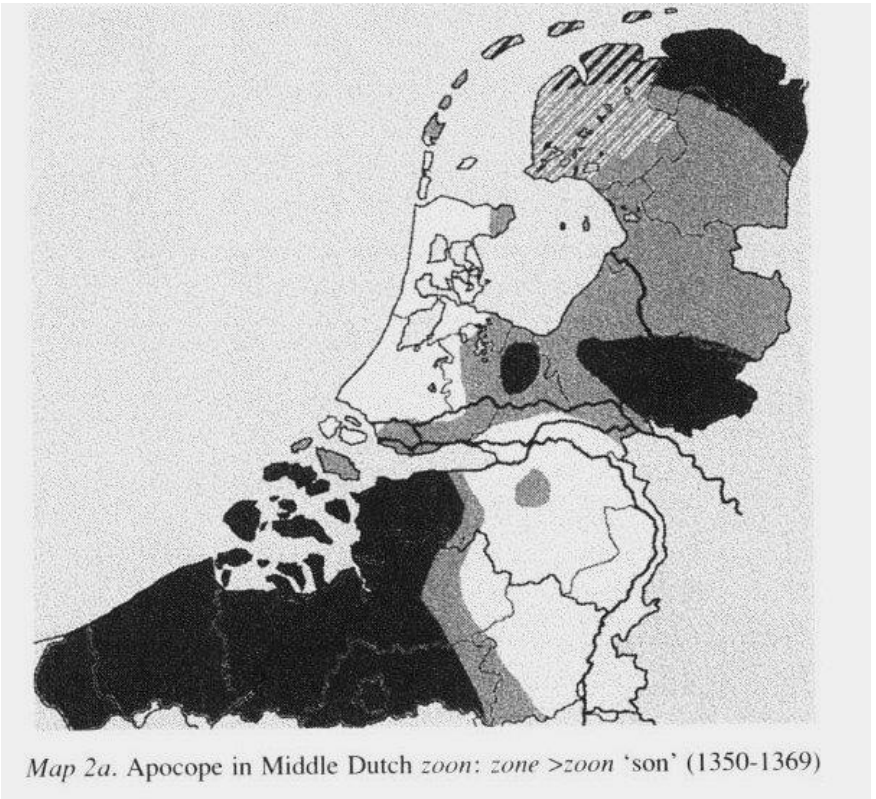
(iv) The historical development of apocope in the Dutch language area (a feature of a word language).

Van Reenen & Mulder (2003) have studied he development of apocopy in *zone* ~ *zoon* [zoːnə] ~ [zoːn] 'son' in notarial records. Cf. the following maps. (Dark = *zone,* light = *zoon*)



Map 1. Apocope in Middle Dutch *zoon*: *zone* >*zoon* 'son' (1330-1349)[3]

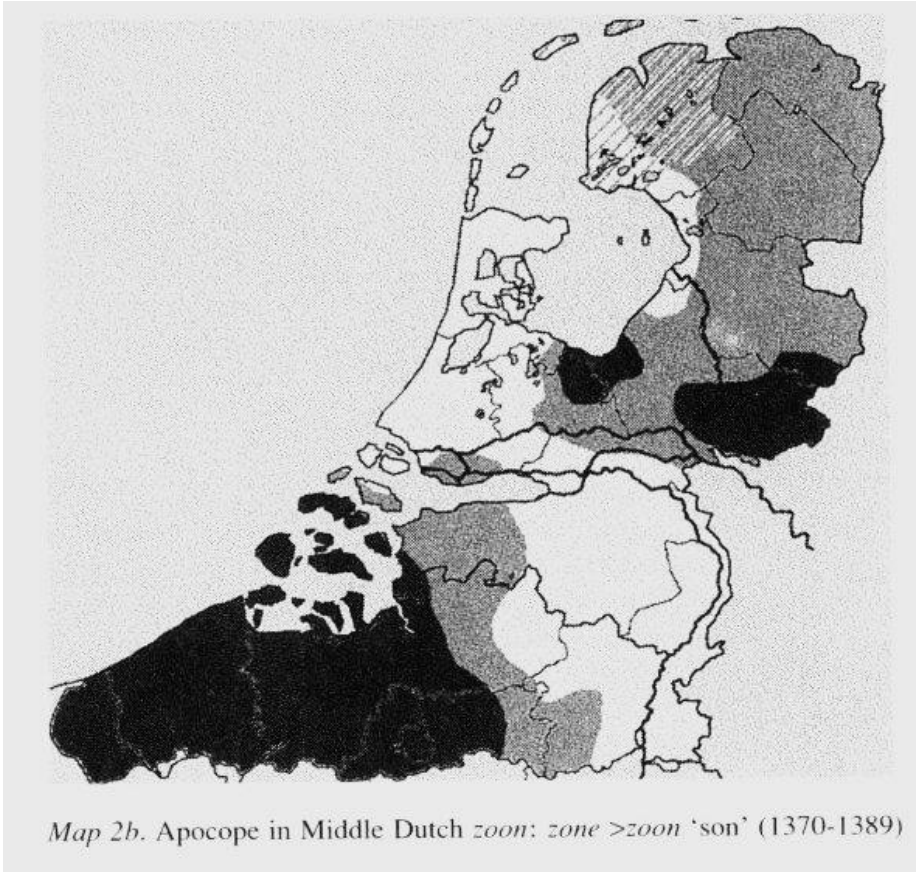
1339-1349



Map 2a. Apocope in Middle Dutch *zoon*: *zone* >*zoon* 'son' (1350-1369)

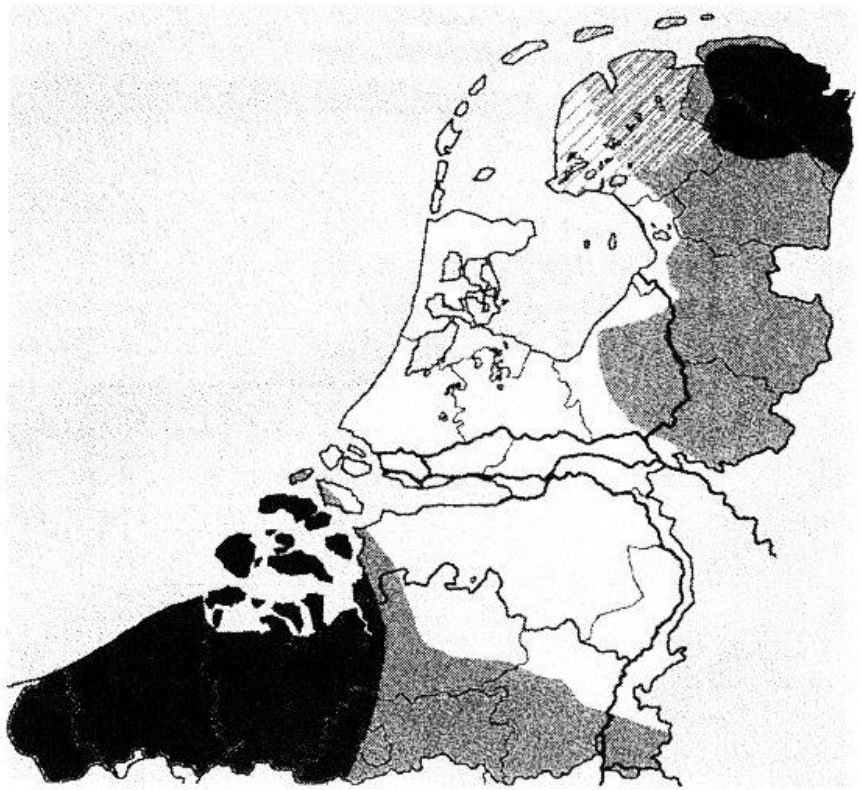
1350-1369

3. The historical development of apocope in the Dutch language area (a feature of a word language).



Map 2b. Apocope in Middle Dutch *zoon*: *zone* >*zoon* 'son' (1370-1389)

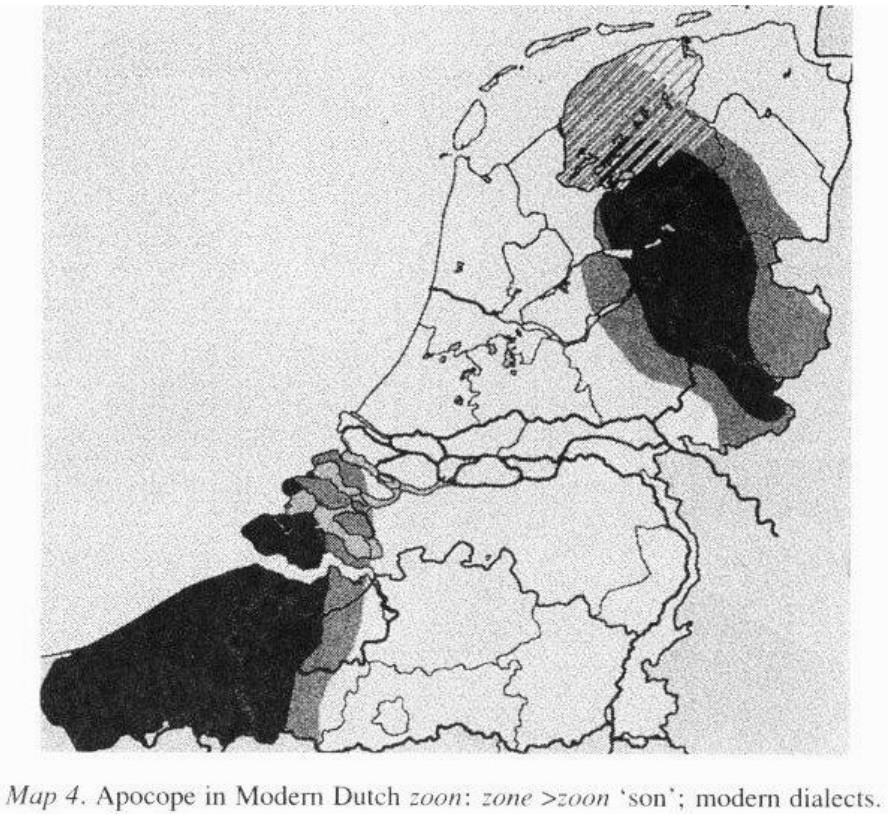
1370-1389



Map 3. Apocope in Middle Dutch *zoon*: *zone* >*zoon* 'son' (1390-1400)

1389-1400

3. The historical development of apocope in the Dutch language area (a feature of a word language).



Map 4. Apocope in Modern Dutch *zoon*: *zone* >*zoon* 'son'; modern dialects.

situation in modern dialects

3. The historical development of apocope in the Dutch language area (a feature of a word language).

Compare place names in Zealand and the county of Flanders with other parts of the historical Netherlands:

(8)

Flanders / Zealand	*(rest of the) Netherlands*
Blankenberge	HardenbergØ
Oostende	WesteindØ, OosterendØ, PurmerendØ
Middelkerke	OuderkerkØ
Oudenaarde	DodewaardØ, TernaardØ
Roeselare	GelselaarØ
Jabbeke	JabeekØ
IJzendijke	GanzendijkØ
Zuiddorpe, Westdorpe	SlootdorpØ, RansdorpØ
Zeebrugge	BalkbrugØ
Beervelde	BentveldØ
Steenvoorde	MontfoortØ

Three more phenomena showing the difference between the northerns and southern variant of Dutch (we have already seen: (1) syllabification non obeying phonological word limits in the South, (2) dipthongisation of stressed mid long vowels in the North) (3) apocope in places other than Zealand and historical Flanders

v. Cliticization:

Word boundaries were blurred in the spelling of Middle Dutch: Van der Wal (1992:131) notes that there are many examples of proclitic and enclitic forms in Middle Dutch (MD) texts. This shows that phonological word boundaries were often not felt as limits:

(9)	*MD cliticized forms*	*MD non-cliticized equivalents*	*gloss*
a.	tien tiden	te dien tiden	'at that time'
b.	darme man	die arme man	'the poor man'
c.	hi leidene	hi leide ene	'he lead him'

vi. Obstruent truncation.

Multiple syllable induced vowel and consonant deletions, cliticizations, in Modern Colloquial Belgian Dutch, **much more** than in Northern Dutch. e.g. [dɑ], [ɥa] for *dat* and *wat* ([dɑt], [ʋat] in other areas) (= syllable simplification).

(vii.) initial devoicing ? (10) *NL Dutch* a. [f]eel veel 'much' [s]eker zeker 'sure' (voiced fric. → devoiced)

The difference between Belgian Dutch and Dutch of the Netherlands on the syllable – word language scale is only moderate.

Other cases of this difference between variants of a single language or between related languages:

- Brazilian Portuguese and European Portuguese

- Turkish and Uzbek

- Swedish and Danish

- Luxemburgian and (Standard) German

- Swiss German and Standard German

- Spanish and Catalan

- French and Picardian (?)

French: a zig-zag evolution

Jacobs 1992: **'Pendular'** movement: of syllable structure typology: *closed* (Class. Latin) > *open* (Late Latin) > *closed* (Gallo-Romance, Old French > *much more open* (Modern French)

A zig-zag evolution **not only movement in syllable structure, but also in the word/syllable language typology:**

1. Early/Classical Latin: features **showing clear characteristics of a word language**:

i. The fusional type of language, with a substantial freedom of word order. The near-absence of clitics suggest that there was a **high autonomy of the word**. Little or no resyllabification. (criterion 13) (Marotta 1999:301, Sampson 2010:47).

ii. (regarding criterion 1) **Complex maximal syllable structure**: sCCVVCCs (Marotta 1999, Sampson 2010:46)

(iii. Vowel length contrast)

1. Early/Classical Latin: features **showing clear characteristics of a word language**:

iv. **Syncope** (criteria 1&11): 6th-5th cent.: in the 2nd syllable, caused by initial initial stress (Meiser 1998:53),

(11) *monestrum (*related to* moneō) > monstrum (*Meiser 1998:66*);
in the final syllable: after -*t,* mostly if the preceding syllable contains at least 2 moras:
(12) *dōt-is > dōs, *mort-is > mors *(Meiser 1998:73)*

v. **Apocope** (criteria 1&11):

(13) PIE *$h_1$éss(s)i > es, PIE *$h_1$éss-ti > est, PIE *h_1s-énti > sunt
(14) *occasional apocope:* fac, fer, dic, duc < face, *fere, dīce, dūce

vi. **Reduction** (criterion 11): vowels in unstressed open syllables weakened to *ə*, later usually evolving to *i* (and sometimes to *e, o* or *u*) (Meiser 1998:67)
ex.: internal syllables

(15) a > i: cad-ō ce-cid-ī ‘fall’ 1st pers. pres. – perf.
b. e > i: leg-ō ē-lig-ō ‘read’ – ‘choose’ 1st pers. pres.
c. o > i *kupido-tāt-s > cupiditās ‘passion’ (*compare* *kupid-os > cupidus)
d. u > i: caput capit-is ‘head’, nom.-gen.)

+ 7 other types of vowel weakening in internal unstressed open syllables (Meiser 1998:68-70)

(16) *in final syllables* *prō-dat > prōdit ‘appear’ 3rd pers. pres. (*ibidem, p. 71*)

1. Early/Classical Latin: features **showing clear characteristics of a word language**:

vii. (criterion 6) Development **towards quantity sensitive stress**: from initial to penultimate/antepenultimate stress, dependent on the weight of the penultimate syllable.

However: already cluster simplification from Pre-Latin to Classical Latin (Maniet 1975:97-98, Steriade 1988, quoted by Sampson 2010:49)

(17) word-internally:
a. *sarpmentum > sarmentum (cf. sarpi-ō) ‘shoot, brushwood’
b. *indulgtum > indultum (cf. indulge-ō) ‘indulgence’
c. *aksla > * azla > āla (cf. axilla) ‘wing’

word-initally:
d. *ktunika > tūnica ‘tunic’
e. *psaflom >sābulum ‘sand’
f. *sni > nix ‘snow’

word-finally:
g. *kord > cor ‘heart’

2. **Classical Latin ➔ Late Latin**: **clear movement into the direction of a syllable language**

(i. Loss of vowel length distinction)

ii. **Monophthongization** (already partially in Classical Latin, Väänänen 1984:38-39).

(18) a. *prai > prae > pre ‘before’ b. amoenus > amenus ‘beautiful’ c. auriculas > ōriculas ‘ears’ (acc.)

iii. **Cluster simplification**, giving rise to a less complicated syllable structure (Väänänen 1984:62-63):

(19) a. sanctus > santus ‘holy’ b. cinctus > cintus ‘belt’
c. (dē)functus >defuntus ‘dead’ d. sursus > susus ‘up’ nunc > nuc
e. quondam > quodam ‘somebody’, *abl.* f. nunc > nuc ‘now’

iv. **Loss of final nasals**, giving rise to open syllable structure:

(20) diem > die (*Väänänen 1984:66*).

v. Beginnings of **I-prosthesis** (Sampson 2010:54ff), resolving sC(L) onsets.

(21) a. spes > ispes ‘hope’ b. spatium > ispatium ‘space’ c. institui > inistitui ‘build’, *3rd pers. perf.*

3. Late Latin ➔ Gallo-Romance and Old French: A swing back to a word language

i. The so-called Second **diphthongization** (criterion 9): stressed vowels in open syllables are diphthongized (Fouché 1956, vol. 2:223ff, Pope 1952: 60-62, 103-104, La Chaussée 1989:182, 185, 187, 194).

(22) a. dēbet > *OF* deit (*Mod. French* doit, cf. devoir *vs.* doit) 'must'
b. cor [kɔr] > [kuo̯r] 'heart'
c. mare [ˈmaːre] > [ˈmae̯rə] 'sea'

ii. **Degemination** (criterion 4): The geminate consonants of Late Latin and those resulting from assimilation in the Gallo-Romance period were reduced to single consonants in Old French. This happened from the 9th century onwards (Pope 1952:147)

iii. **Vowel reduction due to stress** (criterion 11, Pope 1952: 103-104)

(23) a. terːɑ > tɛrə 'earth' b. portɑs > portəs 'doors'

iv. **Vowel deletion due to stress** (syncope, criterion 11, Pope 1952: 112)

(24) a. perdere > pɛrdrə 'loose' b. ɑrborem > arbrə 'tree'

3. Late Latin ➔ Gallo-Romance and Old French: A swing back to a word language

v. **Final devoicing** (criterion 8) from the 7th century onwards (Pope 1952:98), centuries before the same process happened in Germanic

(25)	a. [luŋgum]	> [luŋ**k**]		‘long’
	b. [grɑndem]	> [grãn**t**]		‘big’
	c. [perdo]	> [pɛr**t**]		‘loose’
	d. [riːsum]	> *[rizʊ]	> [ri**s**]	‘laugh’
	e. [serwum]	> *[sɛrvə]	> [sɛr**f**]	‘slave, servant’

4. Old French ➔ Middle French and Modern French: A swing to a clear syllable language

i. **Monophtongization** (criterion 9) again (at least for *falling* diphthongs), from the 11th century onwards (Pope 1952: 443ff), [au] > [o], [ai] > [e], etc.

ii. **Loss of productivity of vowel reduction** (criterion 11): Unstressed full vowels introduced into the language at the time, e.g. in loan words, were no longer reduced to schwa. Schwas remain as relics of a word language

iii. **Loss of final devoicing**. (Apart from a few relics like the lexicalized alternations in *neuf* ~ *neuve* 'new' and *grand ami* [grɑ̃tami] ~ *grande amie* [grɑ̃dami] 'big friend')

iv. **A change in the conditioning of final vowel deletion** (criterion 11). Vowel deletion (of schwa) has remained in Middle and Modern French, but has taken another role: instead of being conditioned by stress, **it is now conditioned by syllable structure optimization**:

(26) le + homme > l'homme (/lə+ɔm/ > [lɔm]) 'the man, mankind'

v. **Proliferation** of cliticization and resyllabification

vi. **Final coronation of syllable-languagehood**: **loss of word accent**. Because of vowel reduction and syncope in OF, stress could become word final (and, later, phrase final). From the 15th century onwards: loss of word accent (Marchello-Nizia 1995:127). **The word ceases to be a relevant metric category. Development of unbounded feet.**

5. After ±1700: movement back towards a word language?

Around 1700:
- advent of word final schwa deletion (and presumably word internal schwa deletion, as in *mainte(ə)nant)*
  and, as a result of that:
- advent of syllable final obstruents

Progressive arrival of initial obstruent clusters (other than already existing s+obstruent clusters):

(27) [tfɛ] (te fais) pas de bile ‘dont worry’

And also obstruent+nasal combinations:

(28) [snɛ] (ce n’est) pas ... ‘it is not ...’

These clusters often violate the minimal sonority distance limitations established for more formal speech.

French, quo vadis?

The helix of linguistic history (*der Spirallauf der Sprachgeschichte*), Von der Gabelentz 1891:255ff.)

Braunmüller 2014: in Swedish and Norwegian, the drift toward a word language, prevalent in Germanic languages, was stopped in the 18th century, through (a) language contact, (b) tonal retention and genesis, (c) language cultivation, and there seems to be a reversal.

Reversal in Present Day French back into the direction of a word language?

The interaction of segmental and prosodic structure.

Speculation:

- Segmental changes can bring about a reinterpetation of the relative importance of individual types of prosodic constituents, vis-à-vis other types.
- This, then, can bring about further segmental changes, induced by the change in relative importance of a specific type of constituent.
- An ongoing process into a given direction toward a word language (as mostly in Germanic languages), or to a syllable language (as mostly in Romance languages) can be stopped or reversed at any moment.
- as illustrated by the case of Swedish and Norwegian, and, with multiple reversals, in the development from Latin to French.

If this is true, this makes the mechanics of what Rudi Keller (1994) calls “The Invisible Hand in Language” more visible.

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