



Schwa on the border between Dutch and French

Two refutations of supposed effects of language contact,
grounded in language-typological history

Roland Noske

Lille 3 University, CNRS UMR 8163 *Savoirs, Textes et Langage*

roland.noske@univ-lille3.fr

<http://perso.univ-lille3.fr/~rnoske>

Assumptions that will be refuted:

A. Pope (1952) and many others: **In the history of French, the reduction of full unstressed vowels to schwa is the result of the Germanic superstrate.**

“The Frankish system of accentuation was a strong expiratory one and it was in the intensifying of the weak Latin tonic stress that the Germanic speech-habits, and in particular the Frankish, exercised their strongest influence in pronunciation. Directly resultant were: <...> **the reduction, or effacement of the unstressed vowels** <...>.” (1952:13)

“Under the influence of the intensified tonic (= expiratory R.N.) stress of the Gallo-Roman period, atonic vowels in every type were ordinarily either effaced or reduced to ɐ (= ə, R.N.), <...>”. (1952:112)

B. Noske (2005, 2007): **The origin of vowel (schwa) deletion and syllabification across morpheme boundaries in Southern Dutch** (as opposed to Northern Dutch) **is the result of language contact with French** (more precisely an adoption of a specific constraint order from French).

I. Resyllabification and vowel deletion in Southern and Northern Dutch

In Southern (Belgian) Dutch, morpheme boundaries are not boundaries for syllabification, in contrast to Northern (Netherlandic) Dutch:

(1) underlying form	Northern Dutch	Southern Dutch
a. /œyt+ɛində+lək/	[œyt.'ʔɛində.lək]	[œy.'tɛində.lək]
b. /vər+arm+ən/	[vər.'ʔar.mən]	[və.'rar.mən]
c. /ɔn+e:ns/	[ɔn.'ʔe:ns]	[ɔ.'ne:ns]
d. /bɛrɣ+ɑx.təx/	['bɛrɣ.ʔɑx.təx]	['bɛr.ɣɑx.təx]

(2) a. uiteindelijk	'final(ly)'	<i>uit</i> 'out,'	<i>einde</i> 'end',	<i>-lijk</i> adjectival suffix
b. verarmen	'em' poverish'	<i>ver-</i> verbal prefix,	<i>arm</i> 'poor',	<i>-en</i> infinitival suffix
c. oneens	'in disagreement'	<i>on-</i> 'un-',	<i>eens</i> 'in agreement'	
d. bergachtig	'mountainous'	<i>berg</i> 'mountain',	<i>-achtig</i> adjectival suffix	

In Southern Dutch, schwa, and sometimes other unstressed vowels, can be deleted with much greater ease than in Northern Dutch:

- (3) a. (N. Dutch) was het /ʊas#ət/ [ʊas.(?)ət] *[ʊast] 'was it'
b. (S. Dutch) was het /was#ət/ [wast] 'was it'

[ʊast] (without a schwa) is possible in allegro speech in Northern Dutch, but not at a normal speech rate, like [wast] in the South.


- (4) a. (N. Dutch) dat ik /dat#k/ [dat.(?)ɪk] 'that I'
b. (S. Dutch) dat ik /da#ɪk/ [dak] 'that I'
- (5) a. (N. Dutch) ik eet /ɪk#e:t/ [ɪk.ʔe:t] 'I eat'
b. (S. Dutch) ik eet /ɪk#e:t/ [ke:t] 'I eat'

Two constraints:


ALIGN: morpheme boundaries and syllable boundaries must coincide

ONSET: syllables must have onsets / onsets of syllables must be filled


Southern Dutch (oneens)

/ɔn+e:ns/	ONSET	ALIGN
.ɔn.e:ns.	**	
 .ɔ.ne:ns.	*	*


Northern Dutch (oneens)

/ɔn+e:ns /	ALIGN	ONSET
 .ɔn.e:ns.		**
.ɔ.ne:ns.	*	*

Southern Dutch (ik eet)


/ɪk#e:t/	ONSET	ALIGN
.ɪk.e:t.	**	
 .ke:t.		**


Northern Dutch (ik eet)

/ɪk#e:t/	ALIGN	ONSET
 .ɪk.e:t.		**
.ke:t.	**	

II. A possible Influence of French?

The same constraint ranking in French, cf. *il arrive, l'homme*

/il#arriv/	ONSET	ALIGN
.il.ariv.	**	
 .i.lariv.	*	*

/lə+ɔm/	ONSET	ALIGN
.lə.ɔm.	*	
 .lɔm.		*

(As will be shown, **faulty**) **hypothesis** (Noske 2005, 2007): Southern Dutch has imported the constraint order ONSET >> ALIGN through a language contact with French, whereas Northern Dutch has retained the order ALIGN >> ONSET.

The situation of Southern Dutch is not unique in West-Germanic: resyllabification of morpheme-final consonants into empty onsets in Luxembourgish (Gilles 2007)

(6)	underlying form	Luxembourgish	Standard German	gloss
dann en auto	/dan+ən+auto:/	[da.nə.nau.to:]	[dan.ʔaɪn.ɔv.to:]	'then a car'
wann een	/van+e:n/	[va.ne:n]	[vɛn.ʔaɪ.nɐ]	'when a'
wien ass dat	/viən+as+da:t/	[viə.nas.da:t]	[vɛ:ɐ.ʔɪst.das]	'who is that'
Dir op	/dir+op/	[di.rop]	[tyʀ.ʔauf]	'door open'

Also in Swiss German, we find a wide-spread resyllabification across morpheme boundaries (Siebenhaar 2004:428).

The hypothesis of a Romance influence on Germanic dialects which do not respect morpheme boundaries in syllabification may seem a plausible one, but some other Germanic languages and/or dialects for which Romance influence seems unlikely, also display this type of behaviour. This is the case for, e.g., dialects of the province of Noord-Brabant in the Southern part of the Netherlands proper (Johan Taeldeman, p.c.), as well as for Afrikaans (Nübling & Schrambke 2004:286).

III. Syllable and Word Languages

Typological distinction of **syllable vs. stress timed languages** (Pike 1945, Abercrombie 1967): isochrony between syllables vs. isochrony between stressed elements. This distinction was in acoustic phonetics disproved by in *acoustic* phonetics by measurements of, among others, Wenk & Wioland (1982).

But this typology was **revitalised** by Auer (1993, 1994, 2001) and Auer & Uhmann (1988), basing themselves on *perceptual* research by Dauer (1983, 1987). They propose a **multifactorial, scalar** typology the extremes of which are *syllable counting languages* (or simply *syllable languages*) and *stress counting languages* (or *word languages*).

Table 1: prototypical properties of syllable (syllable counting) versus word (stress counting) languages (adapted from Nübling & Schrambke (2004:284-285); OHG = Old High German, NHG = Middle High German)

nr.	criterion	syllable languages → syllable counting syllable as basic prosodic unit (foot length variable)	word / accent languages → stress counting 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	geminate	geminate possible	geminate reduction, except in places where they are morphologically relevant, e.g. in internal compound boundaries e.g. German <i>Schiffahrt</i> [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 en weakly stressed vowel (German, Danish, English). Heavy stress: often difference in length, centralizations (reductions)

10	vowel harmony/ umlaut	possible	rare
11	vowel deletion	because of reasons of syllable optimization	because of stress
12	epenthesis (vowels, glides)	for reason of syllable optimization (compare epenthetic <i>e</i> in Luxemb. <i>Arem, h�llefen, Vollek,</i> intrusive <i>n</i> in Allemanic, <i>wo-n-i, wie-n-i</i>)	if there is, then in order to let stand out morphemic structures like in German <i>eigen-t-lich, namen-t-lich,</i> etc, bonding phoneme <i>s</i> 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	re-analyses follow syllabic principles (Swed. <i>ni</i> , lux. <i>mir, dir nis</i>)	reanalyses are not syllabically motivated (OHG <i>ni.mis.du > ni.mist > NHD</i> <i>nimmst</i>)

According to these criteria, **Modern High German** should be catalogued as a **word language**, while Modern **French** is mostly a **syllable language**. Southern Dutch must be located more towards the syllable language end of the scale than Northern Dutch, which is more like the word language prototype. This is because of the criteria 11 and 13 in table 1. Southern Dutch has vowel deletion and liaison effects, in places where Northern Dutch has vowel retention and glottal stop insertion.

IV. The History of Germanic

i. The History of Dutch

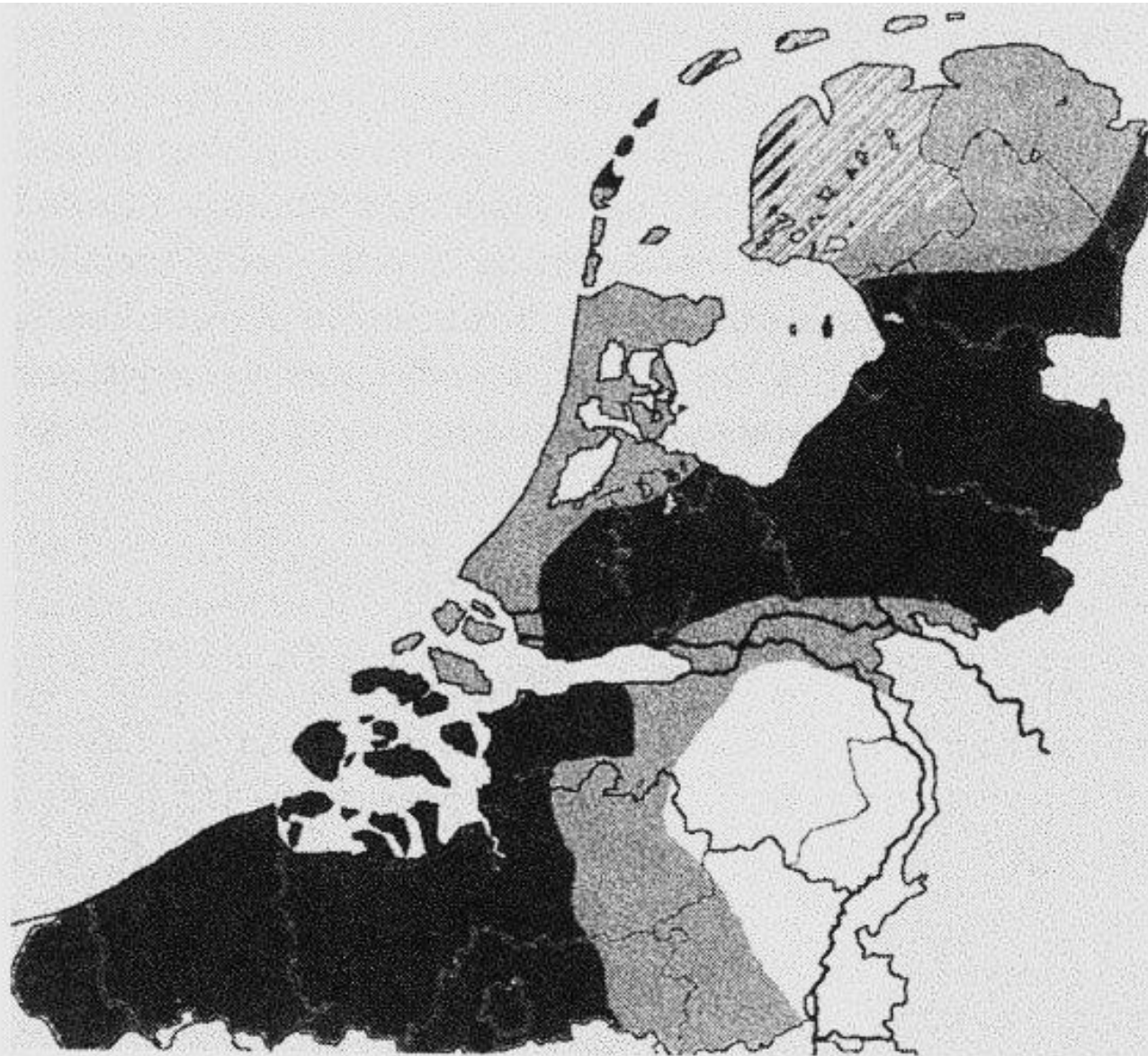
1. Word boundaries were blurred in the spelling of Middle Dutch: Van der Wal (1992:131) notes that there are many examples of proclitic and enclitic forms in Middle Dutch (MD) texts. This shows that word boundaries were often not felt:

(7)	<i>MD cliticized forms</i>	<i>MD non-cliticized equivalents</i>	<i>gloss</i>
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’

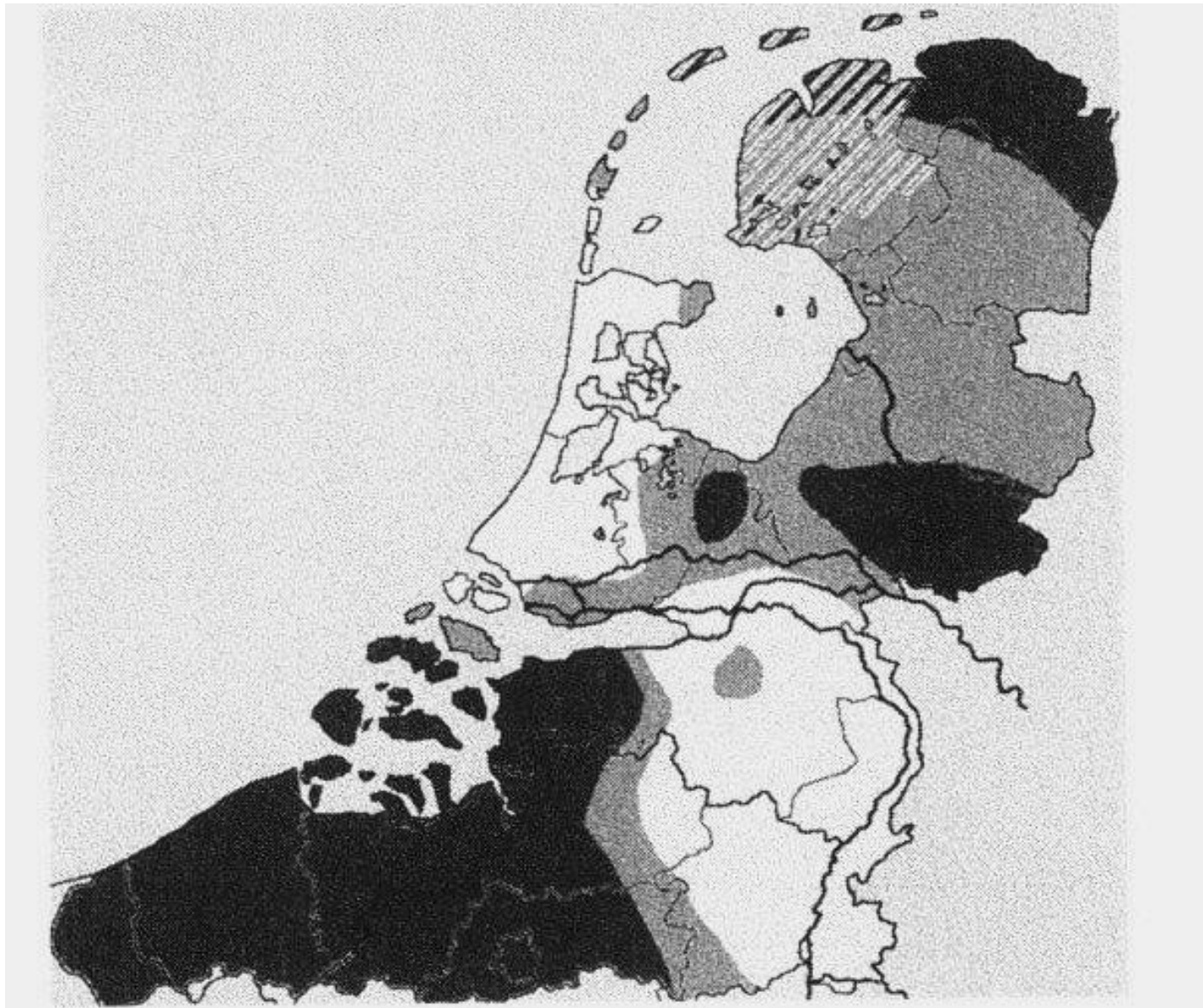
2. **Apocope** in the North, but not in the South: Van Heule (1626) (one of the first grammars of Dutch), notes that **e-apocope** (e.g. *steene* > *steen*) happens in Hollandic Dutch (i.e. the Dutch spoken in the historic province of Holland), but not in Southern dialects like Flemish. This shows that in the early 17th century, this type of vowel deletion happened in Northern Dutch, but not in Southern Dutch.

Apocope can be seen as a vowel deletion under the influence of stress, a characteristic feature of a word language (criterion 11 in table 1).

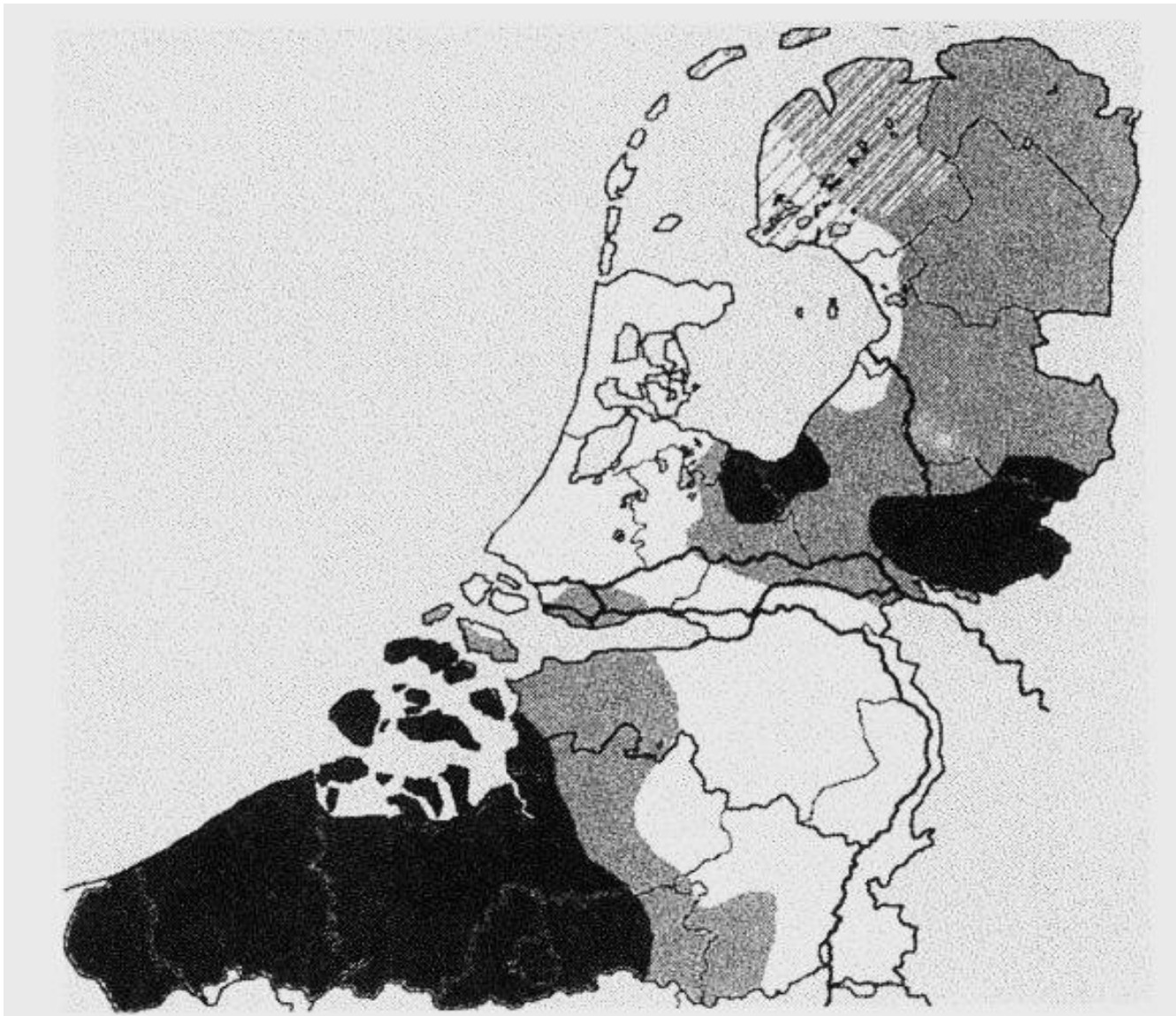
During the 14th century apocope **proliferates** in Hollandish (the dialect of the county of Holland) (Margit Rem, p.c.). Cf. the following maps given in Van Reenen & Mulder (2003:190-192) for the apocope in *zone* > *zoon* 'son'. (dark = *zone*, light = *zoon*)



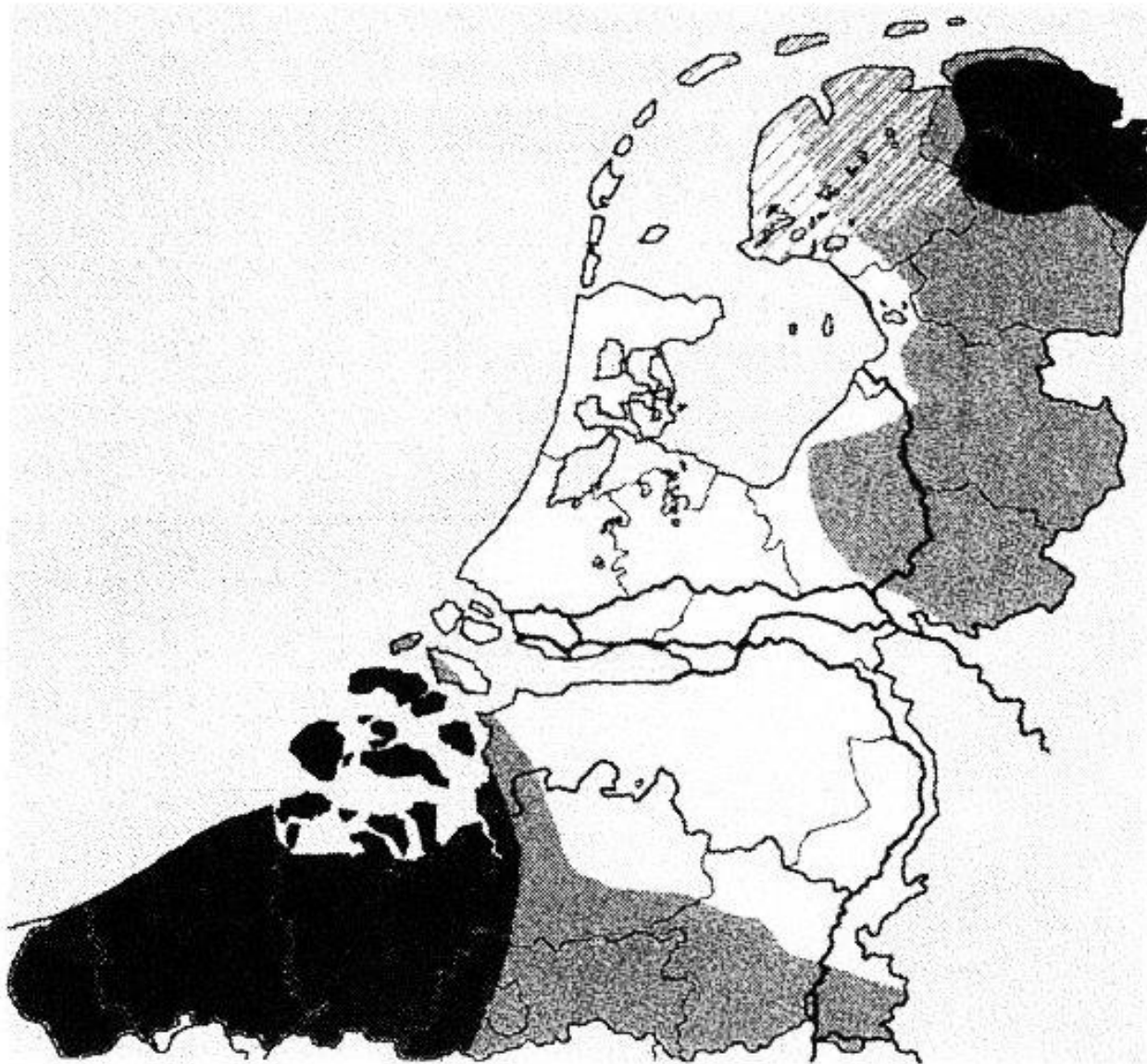
Map 1. Apocope in Middle Dutch *zoon*: *zone* > *zoon* 'son' (1330-1349)³



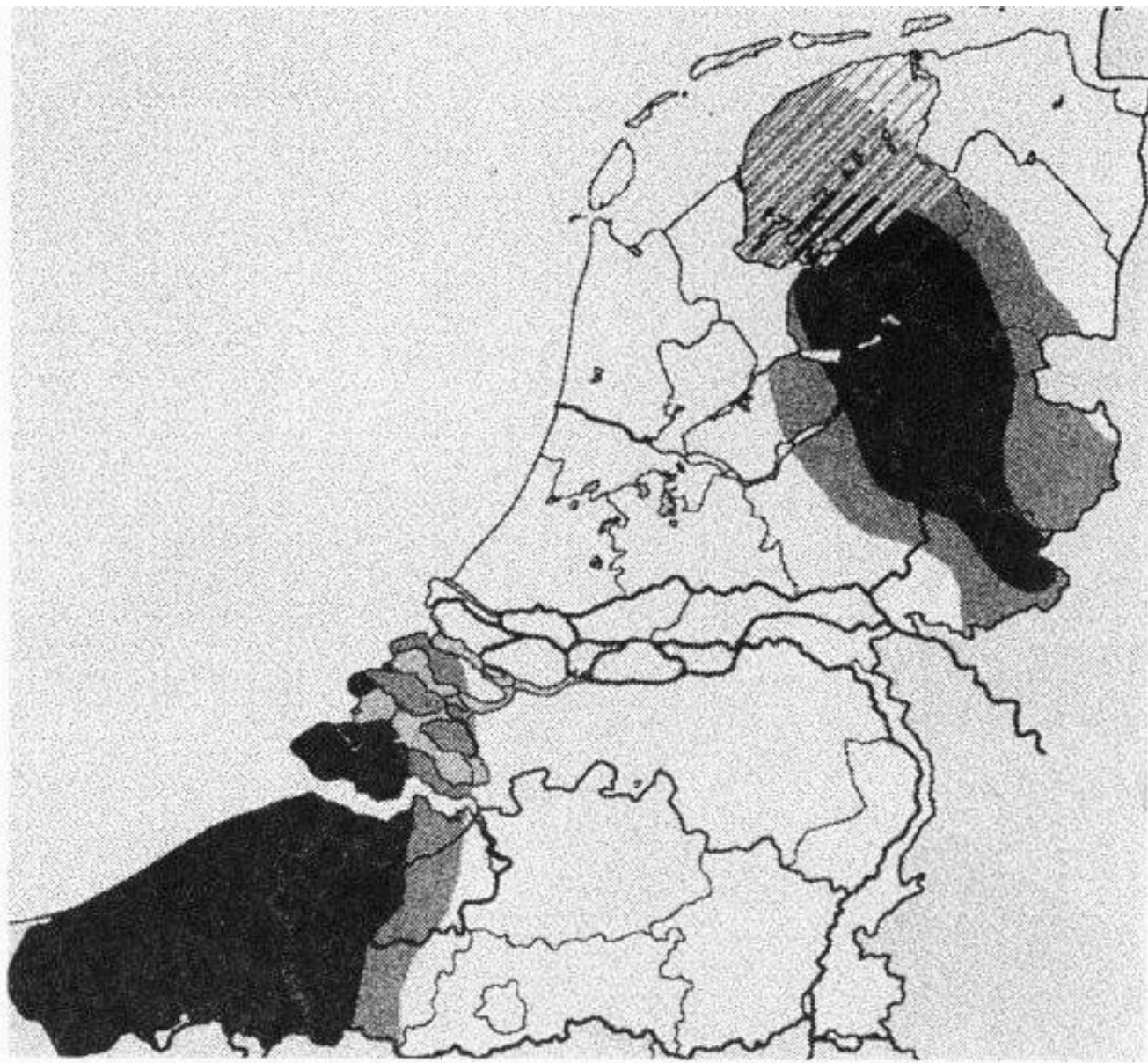
Map 2a. Apocope in Middle Dutch *zoon*: *zone* > *zoon* 'son' (1350-1369)



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



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



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

ii. The history of Germanic in general

Nübling & Schrambke (2004) observe that, using the Auer's typology of syllable vs. stress counting languages sketched above (see table 1), one can find that there is a scalar difference between the Germanic languages.

Swedish, Norwegian and Afrikaans: 'peripheral Germanic languages': syllable languages

Danish, German and English: 'central Germanic languages': stress languages, with Luxembourgish (and Southern Dutch?) in the middle.

Nübling & Schrambke (2004) mention a number of diachronic processes supporting this view:

- i. An ever increasing **marking of word beginnings** in the course of the history of High German, like the insertion of glottal stops instead of resyllabification, i.e. criterion 13 of table 1 and exactly the point that distinguishes Northern Dutch from Southern Dutch, see (2).
- ii. Various **syncope processes** taking place in the history High German, making it increasingly a language of syllabic complexity (criterion 1), for which Nübling & Schrambke (2004:292-293) cite Werner (1978). Werner shows that these processes are part of a systematic movement towards syllabic complexity in coda position (traditionally called *Konsonantenhäufung* 'consonant crowding').

- iii. The presence in Old High German (**OHG**) of **vowel harmony / metaphony** (criterion 10) and the **loss** of its productivity **in later stages of High German**.
- iv. The frequent **cliticizations** and **concatinations** of small words OHG (referring to criterion 13 for syllable languages), much like the forms in (7) in Southern Dutch.
- v. The **degemination** of OHG geminates (criterion 4) in Middle High German (MHG).
- vi. The appearance of **linking elements** ‘Fugenelemente’ between morphemes in Early New High German (nowadays highly productive), like in *Qualitätsukontrolle*, a feature NHG shares with Modern Dutch (*kwaliteitsucontrole*). This is manifestation of a boundary signal for words (hence criterion 13).

To this list, one can add two more diachronic processes, one of which is of particular importance for us here:

- vii. The **reduction of full unstressed vowels to schwa** (criteria 9 and 11) in the transition from OHG to MHG.] (and between Old Dutch and Middle Dutch).
- viii. The **advent of devoicing of finals stop in MHG**, where the devoicing is absent in OHG. Its function can be seen as the introduction of yet another boundary signal (criterion 13).

Vowel reduction from full vowels to schwa also marks the *transition* from Old to Middle Dutch and from Old to Middle High German.

==> In both languages, Dutch and High German, the vowel reduction started around 1050/1100. <==

These processes show that **German has indeed moved into the direction of a clear word language.**

(Some of these processes, like final devoicing and vowel reduction are absent in certain Bavarian and Alemannic dialects, showing that these dialects are much less word type languages, but rather more like syllable type languages).

Indeed, Nübling & Schrambke (2004:290), basing themselves on Frey (1988) mention that

==> OHG must be catalogued “as being very much of the syllable type”. <==

V. Consequences for the history of French

Pope (1952), perhaps the most authoritative handbook on the history of French, establishes a direct link between the Franconian superstrate and the reductions of full unstressed vowels to schwa and the subsequent deletion of some of these schwas, depending on their position. Pope writes (1952:13):

“The Frankish system of accentuation was a strong expiratory one and it was in the intensifying of the weak Latin tonic stress that the Germanic speech-habits, and in particular the Frankish, exercised their strongest influence in pronunciation. Directly resultant were: <...> (b) The reduction, or effacement of the unstressed vowels <...>.” Ibidem, p.112: “Under the influence of the intensified tonic (= expiratory R.N.) stress of The Gallo-Roman period, atonic vowels in every type were ordinarily either effaced or reduced to **e** (= ə, R.N.), <...>.”

Repeated by several handbooks, e.g. the one by Zink for preparing the *agrégation* (the poor kids!, having to learn faulty ‘facts’ -:)) (1986:37):

“... c’est au cours des IIIe et IVe siècles que la prosodie devient accentuelle. Les Francs, au Ve siècle, lui communiquent un surcroît de vigueur”
(==> **this is totally false!** <==). “<...> [l’intensité de l’accent] tend, en syllabe ouverte, <...> à affaiblir les voyelles atones jusqu’à les faire disparaître.”

Why is it totally false?

As we have seen, the Germanic of that pre-literary period must have been much more oriented towards the **syllable type** than towards the word type.

1. 5th century Franconian had no strong intensity accent

Consequences: As illustrated in table 1, in a syllable type language, there is little or no difference in structure and vocalic quality between stressed and unstressed syllables (table 1, criteria 5 and 9). It is indeed **very questionable whether 5th century Franconian really had a strong intensity accent**. The present day dialects of Germanic that are clearly of syllable type have precisely less difference in intensity between stressed and unstressed syllables (like the Wallis (Valais) dialect in Switzerland as noted by Moulton (1941:39-40)).

2. Vowel reduction took place much earlier in French than in Germanic

Also, if Old Franconian had a strong intensity accent, one would expect many instances vowel reductions and syncope in the language. But, as we have just seen, these occurred only in the transition towards Middle High German and Middle Dutch (= Low Franconian), i.e. **not earlier than the 11th century**. But studies of the **history of French phonology**, like Richter (1934:202) situate the **reduction** and subsequent deletion **much earlier, between the end of the 4th and the end of the 6th centuries**, i.e. at least **5 centuries earlier** than in Germanic itself!

Hence, it must be concluded that **schwa reduction** in French has an **independent source**. In fact, the development toward a language with a more closed syllable structure had started in the 3rd century, if not even earlier, see Richter (1934:34).

3. Final devoicing took place earlier in French than in continental West-Germanic

Also, Old French had **final devoicing** at a period **in which it did not yet occur in Germanic**, i.e. in later Gallo-Roman (Pope 1952:98), hence around 800. As we have seen in section 3, final devoicing can be seen as the introduction of a **word boundary marker**, i.e. a feature of the word language prototype.

4. In the Strasbourg Oaths, French is more consonantal than Franconian

Strasbourg Oaths of 842: the first Old French text is in fact a parallel Old French/Franconian text. If we compare the syllable structure of the Old French text with that the Old Franconian text, we see a striking result.

The first parts of the Old French and Franconian texts:

Pro deo amur et pro christian poblo et nostro commun salvament, d'ist di in avant, in quant deus savir et podir me dunat, si salvarai eo cist meon fradre Karlo et in aiudha et in cadhuna cosa, si cum om per dreit son fradra salvar dist, in o quid il mi altresì fazet, et ab Ludher nul plaid nunquam prindrai, qui meon vol cist meon fradre Karle in damno sit.

In godes minna ind in thes cristiânes folches ind unsêr bêdhero gehaltnissî, fon thesemo dage frammordes, sô fram sô mir got gewizci indi mahd furgibit, sô haldih thesan mînan bruodher, sôso man mit rehtu sînan bruodher scal, in thiu thaz er mig sô sama duo, indi mit Ludheren in nohheiniu thing ne gegango, the mînan willon imo ce scadhen werdhên.

Translation: “For the love of God and for Christendom and our common salvation, from this day onwards, as God will give me the wisdom and power, I shall protect this brother of mine (Charles), with aid or anything else, as one ought to protect one's brother, so that he may do the same for me, and I shall never knowingly make any covenant with Lothair that would harm this brother of mine {Charles, Louis}.”

If we count the syllables (leaving out the names), one comes to the following results:

	number of syllables	open syllables	closed syllables	closed syllables ending in an obstruent
Old French	103	39 (38%)	64 (62%)	20 (19%)
Franconian	103	45 (44%)	58 (56%)	19 (18%)

Hence:

In 842, French was **more consonantal** than Franconian. Old French was more of the word language type than Franconian. The word language type character of Old French has **independently** given rise to vowel reduction, thus creating **schwa**.

The subsequent **reversal** in the development of French (**i.e. the perpendicular motion**, see Jacobs 1989) has turned it into a syllable language and has eliminated the existence of vowel reduction (criterion 11), leaving schwa as a **separate phoneme**. However, the **deletability** of schwa **remained**, because it fits nicely in the strategies for **syllable optimization** typically employed by syllable languages.

VI. Conclusion

By investigating the *typological development* of West-Germanic and of French, two assumptions in the literature concerning the influence of language contact were refuted, i.e.:

- (i) the hypothesis that the language contact with French caused syllabification across word boundaries and vowel deletion in Southern (Belgian) Dutch;
- (ii) the (received) idea that the language contact with Germanic (Franconian) caused vowel reduction in French.

How did these misunderstandings about the language histories of French and Dutch arise?

- For French (Pope, Zink, and others): by a lack of knowledge of history of Germanic + by **retro-projection** of the **contemporary (20th century) state** of German onto 5th century Franconian (a distance of 15 centuries!!) .
- For Dutch (myself): also by a lack of knowledge of the history of Germanic (now repaired) + ignoring the state of 12th century French (which was a word language, hence no syllabification across word boundaries) + by retro-projection of the character present-day French onto 12th century French.

VII. Moral

One should not indulge too quickly in invoking language contact when trying to explain language change. Before doing so, one should study carefully the histories of all languages involved.

Thank you!

References:

- Abercrombie, David. 1967. *Elements of General Phonetics*. Edinburgh: University Press.
- Auer, Peter, 1993. *Is a rhythm-based typology possible?* = KontRI Arbeitspapier Nr. 21, Universität Konstanz. Downloadable from:
http://www.germanistik.uni-freiburg.de/auer/?Personal:Prof._Dr._Peter_Auer:Publikationen#Online.
- Auer, Peter, 1994. "Einige Argumente gegen die Silbe als universale prosodische Hauptkategorie", in: Ramers, Karl Heinz et al. (eds.), *Universale phonologische Strukturen und Prozesse*. Tübingen: Niemeyer, 55-78.
- Auer, Peter. 2001. "Silben- und akzentzählende Sprachen", in: Haspelmath, Martin, Ekkehard König, Wulf Oesterreicher & Wolfgang Raible (eds.). *Language Typology and Language Universals. An International Handbook*. Berlin: de Gruyter, 1391-1399.
- Auer, Peter & Susanne Uhmann. 1988. "Silben- und Akzentzählende Sprachen". *Zeitschrift für Sprachwissenschaft* 7/2: 214-59.
- Dauer, Rebecca. 1983. "Stress and syllable-timing reanalysed." *Journal of Phonetics* 11, 51-62.

- Dauer, Rebecca. 1987. "Phonetic and phonological components of language rhythm". *Proceedings of the XIth International Congress of Phonetic Sciences*. Vol. 5. Tallinn: Academy of Sciences of the Estonian S.S.R., 447-450.
- Frei, Evelyn. 1988. *Wortteilung und Silbenstruktur im Althochdeutschen*. München: CD Copy & Druck.
- Gilles, Peter. 2007. Aspects of Luxembourgish Prosody. Paper presented at the 29th annual meeting of the German Linguistic Society (DGfS), 1 March, Siegen.
- Jakobs, Haike, 1989. Nonlinear Studies in the Historical Phonology of French. Unpublished Ph.D. Dissertation, Katholieke Universiteit Nijmegen.
- Moulton, William G. 1941. *Swiss German dialect and Romance Patois*. Supplement to *Language* 17/4. Baltimore: Linguistic Society of America.
- Noske, Roland. 2005. "A prosodic Contrast between Northern and Southern Dutch: a Result of a Flemish-French Sprachbund". In: Broekhuis, Hans et al. (eds.). *Organizing Grammar. Linguistic Studies in Honor of Henk van Riemsdijk*. Berlin: Mouton de Gruyter, 474-482. Downloadable from: <http://perso.univ-lille3.fr/~rnoske/publications/prosodiccontrast.pdf>
- Noske, Roland. 2007. "Een aan het Frans ontleend principe van fonologische organisatie in het Zuid-Nederlands". In: Fenoulhet, Jane, Arie J. Gelderblom, Josien Lalleman, Lut Missinne & Jan Pekelder (eds.). *Neerlandistiek in contrast*. Amsterdam: Rozenberg, 275-285.

- Nübling, Damaris & Renate Schrambke. 2004. "Silben- versus akzentsprachliche Züge in germanischen Sprachen und im Alemannischen". In: Glaser, Elvira, Peter Ott, & Rudolf Schwarzenbach (eds.), *Alemannisch im Sprachvergleich. Beiträge zur 14. Arbeitstagung für alemannische Dialektologie in Männedorf (Zürich) vom 16.-18.9.2002*. Stuttgart: Franz Steiner, 280-320.
- Pope, Mildred. 1952. *From Latin to Modern French*. 2nd revised edition (1st edition 1934). Manchester: Manchester University Press.
- Pike, Kenneth. 1945. *The Intonation of American English*. Ann Arbor: University of Michigan Press.
- Richter, Elise. 1934. *Beiträge zur Geschichte der Romanischen. I. Chronologische Phonetik des französischen bis zum Ende des 8. Jahrhunderts*. Halle (Saale): Niemeyer.
- Siebenhaar, Beat (2004): "Berner und Zürcher Prosodie. Ansätze zu einem Vergleich." In: Glaser, Elvira; Ott, Peter und Schwarzenbach, Rudolf (eds.): *Alemannisch im Sprachvergleich. Beiträge zur 14. Arbeitstagung für alemannische Dialektologie in Männedorf (Zürich) vom 16. - 18.9.2002*. Stuttgart: Franz Steiner, 419-437.
- van der Wal, Marijke. 1992. *Geschiedenis van het Nederlands*. Utrecht: Het Spectrum.

- Van Heule, Christaen. 1626. *De Nederduytsche Spraec-konst ofte Taelbeschryvinghe*. Leiden: Jacob Roels. Facsimile edition of the 2nd edition (1633), edited and commented by W.J.H. Caron, published in 1953 by Wolters, Groningen.
- van Reenen, Pieter & Maaike Mulder. 2003. "Linguistic Interpretation of Spelling Variation and Spelling Conventions on the Basis of Charters in Middle Dutch and Old French: Methodological Aspects and Three Illustrations." In: Goyens, Michèle & Werner Verbeke (eds.), *The Dawn of the Written Vernacular in Western Europe*. Leuven : Leuven University Press, 179-199.
- Wenk, Brian & François Wioland. 1982. "Is French really syllable-timed?" *Journal of Phonetics* 10, 193-216.
- Werner, Otmar. 1978. "Schwa-Schwund und Phonotaktik im Deutschen". In Birnbaum, Henrik et al. (eds.) *Studia Linguistica Alexandro Vasilii filio Issatschenko a Collegis Amicisque oblata*. Lisse: The Peter de Ridder Press, 471-486.
- Zink, Gaston. 1986. *Phonétique historique du français*. Paris: Presses universitaires de France.