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Autonomous typological prosodic evolution versus the Germanic superstrate in diachronic French phonology*

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Abstract
The traditional idea that in Early French, the Frankish superstrate had a major influence on the phonology is mistaken. Facts from Old Frankish itself show that this cannot have been the case. In addition, the phonetic concept on which the idea is based, i.e. the distinction between 'expiratory' and 'melodic' languages, is outdated and invalid. The facts for which the Frankish influence was invoked find a much more satisfactory explanation if one considers the evolution of the entire prosodic system of the language. The distinction between syllable and word languages, as proposed by Auer and Uhmann, provides a fruitful framework for this.

1 *Introduction*

In Gallo-Romance, processes of vowel reduction, vowel deletion (syncope/apocope) and diphthongization became active in the 5th and 6th centuries. Their advent is traditionally explained by the development of a strong 'expiratory' accent: the 'melodic' accent of Latin would have been replaced by an accent which then would have grown progressively stronger, to the detriment of the effort of articulation for unstressed vowels. This assumed decrease in articulatory effort is presented as the explanation for the reduction or even deletion of these vowels. Examples are given in (1)-(3) (from Pope 1952: 103-104 and 112, transcribed into IPA):

(1) vowel reduction
a. terːɑ > tɛrə 'earth' b. portɑs > portəs 'doors'

(2) vowel deletion
a. perdere > pɛrdrə 'loose' b. ɑrborem > arbrə 'tree'

In descriptions of the history of French, this development is usually attributed to the influence of the Germanic, particularly Frankish, superstrate. In these descriptions one finds passages like:

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> 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 <...>.
> (Pope 1952:15)

Further on in this text we find:

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

Similar passages can be found in various other texts, like Von Wartburg (1965:65), Zink (1986:37) and La Chaussée (1989:193).

Apart from vowel reduction and vowel deletion, the development of final stress that characterizes Modern French is also – indirectly – attributed to the Germanic influence:

> Mais la prononciation des Germains, qui frappait à coups de marteau la syllabe accentuée et qui, par là, a provoqué la chute de la voyelle finale (non accentuée) au VIIe siècle, doit avoir créé des circonstances favorables à l'oxytonisme français. (Kukenheim 1971:319)
> (But the Germanic pronunciation, which hit the stressed syllable by hammer strokes and which as a consequence caused, in the 7th century, the deletion of the (unstressed) final vowel must have created a situation favorable for the advent of French final stress.)
> (translation mine, RN)

In these texts, a big part of the major phonological changes that French has undergone from its genesis until the Middle French period is indeed attributed to the influence of Germanic.[1]

In this article, I challenge this idea. I show that the arguments advanced in favor of a Germanic influence are invalid, that the very conception of the

[1] Although widely found in texts, the idea of a Frankish superstrate influence on Gallo-romance stress has not been accepted by all historical linguists of French. For instance, Cohen (1967:109) expresses some doubts: "Les grands effets de l'accentuation (disparition des voyelles après l'accent) ont quelquefois été attribués à l'influence germanique, plus particulièrement francique, bas-allemande. De même certaines diphtongues. Mais l'ensemble des altérations n'est pas de type germanique." (The major effects of acccentuation (vowel loss after stress) has sometimes been attributed to the Germanic, more particularly Frankish or Low German, influence. The same applies to certain diphthongs. But the changes as a whole are not of a Germanic type.)

nature of stress on which these arguments are based has become outdated by modern phonetic research and that the evolution of stress in French forms part of an autonomous development regarding the prosodic organization of the language.

This paper is organized as follows. In section 2, I show that the assumption of an influence of a Germanic expiratory stress on Gallo-Romance is mistaken. Then, in section 3, I briefly show that experimental phonetic research has shown that the very distinction between melodic vs. expiratory stress as used in the afore mentioned texts is outdated. Then, in section 4, I treat some additional changes in the histories of French and West Germanic. This then paves the way for section 5, where I treat a general prosodic typology in which the changes in French are embedded and which offers a far more comprehensive framework for the explanation of the phonological changes in question than the putative influence of a Germanic superstrate.

2 *Arguments against a Frankish influence on the stress system*

For the sake of the argument, I assume in this section that expiratory stress is linguistically relevant (but see section 3). The claim that Frankish had a 'strong expiratory [stress]' (Pope 1952:15), a stress of 'excessive strength' (Zink 1986:37) or even one that can be compared with 'hammer strokes' (Kukenheim 1971:319) is not supported by any reference to studies that show that Frankish, in what was the pre-literary period of the language, did indeed have the characteristics of a language with a strong expiratory stress. I show here that the supposed borrowing of a heavy expiratory stress from Frankish is extremely improbable, for the following reasons:

i. borrowings of stress systems are rare or non-existent;
ii. 5th century Frankish probably still had the initial Common Germanic root-initial stress, which, had there been transfer, would also have been borrowed;
iii. given the absence of reduced vowels in Frankish itself, Frankish did not have a heavy expiratory stress.

Let us look at these points in detail.

2.1 *Entire stress systems are not borrowed from one language to another*

In the literature on language contact (e.g., Weinrich 1963, Appel & Muysken 1987, Thomasson 2001, Winford 2002) there is no mention of transfer of a stress system from one language to another. Linguists such as Muysken (pc) confirm that this sort of transfer is unattested in historical and current language contact situations. The only real type of stress transfer that

has been attested is linked to borrowed words or morphemes.[2] Another type of stress transfer cited in historical linguistics (e.g., by Halle & Keyser 1971:99-100, Árnason 1996:1) is that of English and other Modern Germanic languages (except Icelandic and Faroese), which would have borrowed their present stress systems (in morphologically simple words, trochaic stress is assigned from the right, with extrametricality of the final syllable) from Medieval Latin. However, this hypothesis has been recently refuted for English by Fournier (2007). It is also highly questionable whether Medieval Latin, a non-natural language because it had no native speakers, still had the stress system of Classical Latin, as tacitly assumed by the proponents of this hypothesis. Rather, one would expect that it was pronounced with the stress systems of the various native languages of the speakers. It seems that the Germanic shift from initial to final trochaic stress is simply an independent development (a claim implicitly made by Lahiri, Riad and Jacobs 1999), just as the shift from the Proto-Latin initial stress to the stress system of Classical Latin (for an Optimality-theoretic account of this, see Jacobs 2003).

2.2 *The place of Frankish stress in the 5th century*[3]

Apart from some words in the Salic Law of the early 6th century, we do not have any written source for Frankish for the period of the supposed borrowing of the strong expiratory accent from the language by Gallo-Romance.[4] We do know, however, that around the 5th century the Germanic dialects stressed the first root syllable (cf. Prokosch 1939:118-119).[5] So, if Frankish stress had indeed had a strong influence on Gallo-Romance, one would expect that this feature would also have been transferred. Hence, Gallo-Romance would have had initial stress. But this, as we know, was not the case.

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[2] German and Dutch provide examples of borrowed morphemes that have kept their stress, e.g. the verbal suffixes *-ier*/*-eer*, the nominal suffixes *-ität*/*-iteit* and the adjectival suffixes *-el*/*-eel*. Also, Samaraccan (a Surinamese creole) has a split prosodic system: words of European origin (English and Portuguese) have accentual prosody, while words of African origin have tonal prosody (Good, to appear). But in both cases, that of German/Dutch and that of Saramaccan, the stress or tonal accents remain linked to the original words or morphemes and are not propagated to the rest of the lexicon.

[3] In this subsection and the following the issue arises of Old Frankish from the 5th to the 11th century. During this period, the second Germanic consonant shift took place, which split up Frankish into Low and High Frankish (the latter being subdivided into Central and Upper Frankish). However, this division is of no importance for the arguments which are advanced here, because the relevant facts are the same for all varieties of Frankish.

[4] There are, however, records of Germanic loan words in Vulgar Latin, cf. Brüch (1913).

[5] Verner's law had functioned in the 1st and 2nd centuries. Its effects became phonemic by the shift of the free Indo-Germanic accent to the first root syllable. Hence, this shift took place after the working of Verner's law, but had been completed before the 5th century (Prokosch 1939:62-64).

2.3 *The supposed heavy expiratory stress in Frankish*

Pope (1952) and Zink (1986) explicitly attribute the heavy expiratory accent of Gallo-Romance that would have caused vowel reduction and deletion to the Frankish superstrate. We would then expect that the putative strong expiratory stress ('with hammer strokes'), would have caused unstressed vowel reduction and deletion in early Germanic itself.

However, Old Frankish did not have processes of reduction and deletion of unstressed vowels. These processes took place only much later in the history of High German and Dutch (both partial or total heirs of Old Frankish), i.e. from the end of the 11th century onwards. The advent of vowel reduction is generally taken as marking the transition between OHG and Middle High German (MHG) and Old Dutch and Middle Dutch (König 1978:73, Quak 1997:37).

To illustrate this, I present here three examples of texts preceding the end of the 11th century, one in High Frankish and two in Low Frankish. Here are the first two lines of Our Father in Southern Rhine Frankish, a High Frankish (more precisely, Central Frankish) dialect, taken from the Weissenburg Catechism of the end of the 8th century (source: Braune 1994):

(3) *fater unser thu in himilom bist giuuihit si namo thin*
father our you in heavens are hallowed be name your
'Our Father in heaven, may your name be kept holy'

In this example one notes that in the word *himilom*, where stress falls on the first syllable, the next two syllables contain full vowels. The second vowel in *namo*, where stress is also initial, has not been reduced either.

Let us compare this example with the first two lines of the same prayer in MHG (from around 1300 A.D.):

(4) *vater unser der da bist in den himeln geheiliget wert din name.*
father our who there are in the heavens hallowed is your name

Here, we see that (among other changes, like the introduction of articles) the second *i* of *himilon* has been reduced to *e* ([ə]), just like the *o* in *namo*. In addition, and in contrast to the 8th century text, the third vowel in *himilom* has been syncopated (the final *n* in the MHG text, compared to *m* in the Old Frankish one, is the result of a change of the form of the dative plural marker).

Let us now look at a text from Eastern Low Frankish (Limburgish), i.e. the Wachtendonck Psalms, dating from the 10th century (Van Helten 1902, Cowan 1957, Kyes 1989).

(5) *Forchta in biuonga quamon ouer mi in bethecoda mi thuisternussi*
Fears and tremblings came over me and covered me darkness
'I became afraid, started to shake, and was covered by darkness'

In Middle and Modern Dutch (which are primarily Low Frankish), the *o* in *quamon* has been reduced to [ə] (*kwamen* [ˈkʊaːmən] in Modern Dutch). *Bethecoda* corresponds to *bedekte* [bəˈdɛktə] in Modern Dutch, showing two instances of vowel reductions as well as a syncopation.

My third example stems from Western Old Frankish (source: Schönfeld 1933):

(6) *Hebban olla vogala nestas hagunnan hinase hic enda thu uuat*
have all birds nests begun except I and you what
unbidan uue nu
wait we now
'All birds have started building nests, except you and me. So what are we waiting for?'

If one compares the words in this sentence with their equivalents in Middle and Modern Dutch, one notes that many vowels have been replaced by *e* [ə]. *Hebban* thus corresponds to *hebben* [hɛbən] in Middle Dutch, *vogala* to *vogele, nestas* to *nesten*, and the infinitival suffix as in *unbiddan*, *-an*, to *-en*.

Hence, we see that in Frankish, reduction and deletion of unstressed vowels did not take place before the end of the 11th century, in contrast to Gallo-Romance, where, as mentioned in the introduction, vowel reduction as well as syncope and apocope took place in the 5th and 6th centuries (Richter 1934:202).

Given these chronologies, it would be strange that 5th century Frankish would have had stress of 'excessive strength', and that this stress would have caused vowel reduction and syncope/apocope in Gallo-Romance, but that it would not have had the same effects in Old Frankish itself.[6]

3 *'Melodic' versus 'expiratory' accent*

3.1 *The role of stress distinction in historical linguistics*

As we have seen, the handbooks on Old French refer to an expiratory stress, which would have been part of the 'Germanic speech-habits' and which would have been taken over into Gallo-Romance. The concept of expiratory

[6] In an extensive study of accent in Germanic, D'Alquen (1988:17, 232) concludes that at the time of the working of Verner's law (1st and 2nd century A.D.), Germanic accent was melodic. There is no indication at all that by the 5th century it had all at once become strongly 'expiratory'.

stress stems from early phonetic science, a stage when a general distinction was made between languages with a 'melodic' accent and languages with a 'expiratory accent'. The distinction dates back to the 1870s and became known through Sievers' textbook on phonetics (1876, 1901[5]). Sievers (1901[5]:217) describes melodic accent as relating to 'wechselnden Tonhöhen' ('changing pitch heights'), whereas dynamic accent or expiratory accent involves 'Stärkeabstufungen' ('alternations in strength'). The distinction is also adopted by other early phoneticians such as Sweet (1906).

In traditional descriptions of the evolution of Indo-European 'languages with melodic accent' sometimes refer to what we now call pitch accent languages (like (supposedly) Proto-European, Ancient Greek and Modern Swedish), but can also refer to other accentual languages in which accent is simpler. For instance, it was assumed that Classical Latin was a language with a melodic accent. In traditional handbooks on the history of Germanic languages (e.g. Hirt 1929:88ff), one of the changes characterizing the genesis of Proto-Germanic would have been the change from melodic to expiratory stress.

3.2 *The distinction confronted with modern experimental phonetics*

Today the major distinction regarding the accentual nature of languages is no longer one between melodic and expiratory stress, but rather between accentual and tone languages. All Indo-European languages are accentual languages. However, there are indeed differences in the realization of accent. As one can read in any modern introduction to phonetics (e.g. Ladefoged 2001, Rietveld & Van Heuven 2001), accent or stress in accentual languages is a mixture of modifications of tone height (F_0), duration, intensity, spectral expansion of vowels and of spectral tilt (change in the relative intensity of the signal in the audible frequency spectrum). Every language has its own specific mix of these correlates and this mix is usually different for primary, secondary and focal stress. But, as pointed out by Ladefoged (2001),

> In nearly every language (...) what we hear as stress is *more a matter of increasing pitch and length* of the syllables *than of increasing their loudness* (2001:23, emphasis mine, RN).

Moreover the perceptibility of intensity (hence strength of expiration) was already questioned early in the 20th century by Saran (1907). Subsequently it was fully dismissed by Mol & Uhlenbeck (1956) in an article written at a time when phonetic measurements had become much more refined. Therefore, from the 1950s onwards, reference to expiratory stress disappeared from the literature, except for some articles by historical linguists uninformed of developments in experimental phonetics.

4 *Other changes in French and Frankish*

The arguments advanced in sections 2 and 3 suffice by themselves to refute the claims concerning the influence of Frankish stress on Gallo-Romance. They lead to the conclusion that the evolution towards vowel reduction and deletion as well as to diphthongization in Gallo-Romance was an autonomous development, which was not the result of influence by a putative expiratory stress. We therefore have to reconsider the developments of the prosodic system in the history of French and continental West Germanic. Then we will see that the phenomena in Gallo-Romance and Germanic discussed above fit into a much more general picture. I will show in section 5 that they are part of more general, partially opposite, typological movements in Gallo-Romance and Germanic. But first, in order to understand this, we take a brief look in this section at other relevant aspects of the evolution of French and West-Germanic.

4.1 *Other aspects of the evolution of French*

Apart from the processes of vowel reduction and vowel deletion mentioned in sections 1 and 2, we should take a look at other changes in French. We will look at the general changes of syllable structure as well as at segmental changes.

4.1.1 *A pendular movement in syllable structure*

As often observed (cf. Jacobs 1992), there was a pendular movement in syllabic structure in the evolution from Classical Latin to Modern French. The different stages of the development can be characterized as follows:

i. from Classical Latin to Late Latin: by a development towards a less complicated, more open, syllabic structure (by the working of several epenthesis processes);
ii. from Late Latin to Gallo-Romance and further on to early Old French: by a more complex syllable structure;
iii. from early Old French to late Old French, Middle French and Modern French: by a progressive movement towards a much more open syllable structure.

This evolution can be schematized as: closed > open > closed > open.

4.1.2 *Diphthongization*

A process of diphthongization was operative in Gallo-Romance and Old French in stressed syllables (Pope 1953: 60-62, 103-104, La Chaussée 1989:182, 185, 187, 194). Examples: mel [mel] > [miɛ̯l] ‘honey’, cor [kɔr] > [kuɔ̯r] ‘heart’, mare [ˈmaːre] > [ˈmaɛ̯rə] ‘sea’.

4.1.3 *Degemination*
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, Bourciez 1930:305).

4.1.4 *The genesis of final devoicing*
As we have seen above in subsection 4.1.1, stage (ii) is characterized by a strengthening of the intensity accent, by the reduction of unstressed vowels and by different deletion processes of unstressed vowels. In addition, there was, from the 7th century onwards, a process of final obstruent devoicing, (Pope 1952:98), cf. the examples given in (7), transcribed into IPA:

(7) a. [luŋgum] > [luŋk] 'long'
b. [grɑndem] > [grɑ̃nt] 'big'
c. [pɛrdo] > [pɛrt] 'loose'
d. [ri:sum] > *[rizʊ] > [ris] 'laugh'
e. [sɛrwum] > *[sɛrvə] > [sɛrf] 'slave, servant'

Pope remarks that this process has taken place in a period characterized by a strong intensity accent. In language typology, so-called word languages tend to have more boundary signals (like devoiced obstruents at word endings) than so-called syllable languages (see the discussion on word versus syllable languages in section 5).

4.1.5 *Loss of productivity of vowel reduction*
During stage (iii), the evolution towards Middle French and further on to Modern French, vowel reduction was no longer productive: unstressed full vowels introduced into the language at the time, e.g. in loan words, were no longer reduced to schwa.

4.1.6 *Loss of productivity of final consonant devoicing*
During the same period, final devoicing disappeared from the language (apart from a few remnants like the lexicalized alternations in *neuf ~ neuve* and 'new' *grand ami* [grɑ̃tami] ~ *grande amie* [grɑ̃dami] 'big friend' (masc. ~ fem.). Below, in section 5, I show that the loss of consonant devoicing is not accidental, but, together with other changes, is the result of a typological development.

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

tendency to arrive at a CV syllable, cf. the deletion of schwa in prevocalic position in (8):

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

I will show that this change in conditioning of schwa deletion is also a consequence of the typological evolution of French.[7]

4.2 *Some aspects of the evolution of continental West Germanic*

Like French, Frankish and the other dialects of West Germanic have undergone substantial changes from the period of the first written sources. The relevant changes are:

i. the genesis, already mentioned in section 2.3, of the process of vowel reduction in the transition of Old High German and Old Dutch towards Middle High German and Middle Dutch;
ii. the development of syncope/apocope in MHG and Middle Dutch;[8]
iii. the genesis in MHG, and partially already in Old Dutch, of final devoicing;[9]
iv. the evolution from an accentual system stressing the first root syllable in Common Germanic towards a system where stress was assigned from the right edge of the word (modulo the stress on the initial parts of compounds).
v. the reduction of geminate consonants from the period of Middle High German and Middle Dutch onwards.

5 *Syllable counting languages and stress counting languages*

It will become clear in this section that the processes in early French and West-Germanic can be understood not by the presence of a putative expiratory accent, but by the evolution of the prosodic systems of the languages in general. I make use of the theory of syllable languages vs. word languages as proposed by Auer (1993, 1994, 2001) and by Auer & Uhmann (1988). This theory is treated in subsection 5.1. Then, in subsection

[7] Schwa deletion in modern French has been the object of a vast literature in modern phonology. Apart from syllabic structure, it mentions among other things, rhythm and morphology as conditioning factors, cf. Verluyten (1988:4-10).

[8] For High German, this was a continuous evolution during several centuries. From the MHG period onwards, more and more vowels were deleted, which gave rise to consonant clusters of increasing complexity (Werner 1978). This evolution is called *Konsonantenhäufung* 'crowding of consonants' by linguistic historians of German.

[9] According to Quak (1997) and other descriptions of the history of Dutch, the genesis of final devoicing in Dutch preceded that in High German.

5.2, I show that the evolution of French, as well as that of West-Germanic can be understood much more fully in this framework.

5.1 *Syllable vs. word languages*

Auer (1993, 1994, 2001) and Auer & Uhmann (1988) propose a theory of syllable counting languages (or simply 'syllable languages') versus stress counting languages (or simply 'word languages'). In order to understand this theory however, we should briefly dwell upon three previous theories regarding prosodic organization. We consider the theories on syllable vs. stress timed languages by Pike (1945; see also Abercrombie, 1967), (subsection 5.1.1), the perceptual theory by Dauer (1983, 1987), subsection 5.1.2) and the model of prosodic phonology by Nespor & Vogel (1986) (subsection 5.1.3)

5.1.1 *Syllable timed languages versus stress timed languages*

According to the theory of syllable timed languages vs. stress timed languages proposed by Pike (1945) and Abercrombie (1967), there are two types of languages: those which maintain an equal temporal distance between syllables and those which keep an equal distance between stressed syllables. The first group, syllable timed languages, would include languages like Spanish and French, whereas the second group, stress time languages, would contain among others English and German.

With the further development of the study of acoustic phonetics, however, this idea was refuted by phonetic measurements. For instance, Wenk & Wioland (1982) show that the distances between French syllables are all but equal, and thus French does not neatly fit under the syllable-timed category.

5.1.2 *The perceptive theory by Dauer*

Despite its multiple refutations, the idea of syllable vs. stress timed languages continues to persist, as it intuitively appeals to linguistically skilled listeners. When confronted with sounds of an unknown language, linguists seem to agree whether the language in question is more of the syllable timed sort or more of the stress timed sort (see Dauer 1983:52-54).

Therefore, it seems that perception is involved. Dauer (1983) noted this and showed that languages that are perceived as syllable timed share the following characteristics:

(9) characteristics of languages perceived as syllable timed:
   i. a relatively simple syllable structure
   ii. the possibilities of contrast between stressed and unstressed syllables are the same (no vowel reduction)
   iii. word accent is weak or non-existent

In contrast, characteristics of languages perceived as stress timed are:

(10) characteristics of languages perceived as stress timed:
i. complex syllable structure
ii. existence of vowel reduction in unstressed syllables
iii. a clearly perceptible word accent, and, on top of that, grammatical rules referring to the place of stress

In a later paper (1987) Dauer added that languages perceived as stress timed have more allophonic variation (e.g., final devoicing, intervocalic voicing) and have more length differences.

Dauer concluded from this that languages perceived as syllable timed and as stress timed in fact differ in the above mentioned characteristics and that it is through these characteristics that the perceptual distinction between the two types of languages is in fact made.

5.1.3 *The prosodic phonology of Nespor & Vogel*

Nespor & Vogel (1986) propose a system of phonological constituents which are organized in a hierarchical fashion. Under this system, one or more constituents are licensed by a constituent belonging to an immediately higher one, implying that a constituent cannot belong to two higher constituents at the same time. The categories of the constituents are:

i. the phonological syllable (σ)
ii. the foot (F)
iii. the phonological word (ω)
iv. the clitic group (C)
v. the phonological phrase (φ)
vi. the intonational phrase (I)
vii. the utterance (U)

5.1.4 *The theory by Auer and Uhmann*

Auer (1993, 1994, 2001) and Auer & Uhmann (1988) combine the ideas of Dauer and Nespor & Vogel. This enables them to propose a scalar, multifactorial typology the extremes of which are syllable counting languages (or simply syllable languages), and languages that count stressed syllables, or word languages. For the syllable languages, the syllable is the main prosodic constituent and these languages have characteristics like the ones in (9). In the word languages, on the other hand, the prosodic word is the main prosodic constituent. These languages share the characteristics in (10). A more precise list of properties is given in Table 1, adapted from Nübling & Schrambke (2004):

Table 1: prototypical properties of syllable (syllable counting) versus word (stress counting) languages

nr.	*indicator*	*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 syllable types 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	geminates	geminates possible	geminate reduction, except in places where they are morphologically relevant, e.g. in internal compound boundaries e.g. German *Schifffahrt* [f:]
4	stress effects	no / few differences in structure of stressed vs. unstressed syllables	stressed syllables are heavy, unstressed syllables are light; diphthongization of stressed vowels, aspiration of initial plosives of stressed syllables
5	stress assignment	mostly syllable based; absence of fixed word stress possible	rules of stress assignment (complex) are morphologically / lexically / semantically determined
6	phonotactics	regular, stable phonotactics, no positionally determined allophones	word boundary (delimitative) signals, positionally determined allophones (initial, medial, final), phonotactic restrictions

7	vocalism	little discrepancy between strongly and weakly stressed vowels, relatively equal tenseness	much discrepancy between strongly and weakly stressed vowels (German, Danish, English). Heavy stress: often difference in length, centralizations (reductions)
8	vowel harmony, umlaut	possible	rare
9	vowel deletion	for reasons of syllable structure optimization	conditioned by stress
10	liaison	yes (across morpheme boundaries)	no (border signals / junctures, e.g. glottal stop)

Of course, word languages and syllable languages are prototypes. In reality languages are situated somewhere between the two extremes. Similarly, not every indicator in the table is relevant for every language. The ideas put forth by Auer and Uhmann have up till now received scant attention, perhaps because the majority of their publications is in German.

5.2 *Modern French as a syllable language and Old French as a word language*

All but one of the indicators given above in table 1 show that Modern French is a syllable language:

Table 2: indicators of table 1 showing that Modern French is a syllable language

nr.	*indicator*	*reason*
1	syllable structure	many open syllables (see section 4.1.1)
2	syllable boundaries	syllable boundaries are not blurred like in Modern German and Modern English (cf. the co-called ambisyllabic consonants in these languages), but clear cut
4	stress effects	stressed syllables are not phonologically longer than unstressed syllables
5	stress assignment	stress is based on syllabic structure, not on morphology; there are no minimal pairs of words that contrast only in the place of stress, like in Germanic languages

6	phonotactics	no positionally determined allophones, no intervocalic voicing, no final devoicing (see section 4.1.6)
7	vocalism	little discrepancy between strongly and weakly stressed vowels, no (synchronic) vowel reduction (see section 4.1.5)
9	vowel deletion	vowel deletion because of reasons of syllable structure optimization (see section 4.1.7)
10	liaison	for reasons of syllable structure optimization

If one applies the criteria of table 1 to Old French, one sees that there are at least five criteria that militate in favor of its categorization as a word language:

Table 3: indicators of table 1 showing that Old French is a word language

nr.	*indicator*	*reason*
1	syllable structure	many complex syllables, much variability between syllable types (see section 4.1.1)
3	geminates	geminate reduction (see section 4.1.3)
4	stress effects	diphthongizations from the 3rd to the 6th centuries (see section 4.1.2)
6	phonotactics	final devoicing as boundary signal (see section 4.1.4)
7	vocalism	reduction of unstressed vowels to schwa
9	vowel deletion	vowel deletion (syncope, apocope) conditioned by stress (see sections 1 and 4.1.7)

As one can see by these criteria, between the periods of Old French and Modern French, the language changed from a word language to a syllable language.

5.3 *Modern Dutch and German as word languages and Old High German and Old Dutch as syllable languages.*

Let us now examine High German and Dutch by the same criteria. First, we look at Modern High German and Modern Dutch, cf. table 4:

Table 4: indicators of table 1 showing that Modern High German and Modern Dutch are word languages

nr.	*indicator*	*reason*
1	syllable structure	complex syllables, variable syllable types, determined by stress and morphology
2	syllable boundaries	ill-recognizable syllable boundaries, ambisyllabicity
3	geminates	geminate reduction from MHG and Middle Dutch onwards
4	stress effects	aspiration of initial plosives of stressed syllables in Modern High German, phonetic dipthongizations of stressed vowels in Modern Dutch
5	stress assigment	complex stress rules, dependent on morphology, preference to stress heavy syllables
6	phonotactics	boundary signals: glottal stop insertion, final devoicing
7	vocalism	productive vowel reduction in Modern Dutch
8	vowel harmony, umlaut	phonological umlaut no longer productive in German, umlaut has become morphologized
9	vowel deletion	syncope and apocope conditioned by stress, like in German *ich hab'* (for *ich habe*), Dutch *vreeslijk* (for *vreselijk*).
10	liaison	in general non-existent, instead: glottal stop insertion

By contrast, OHG and Old Dutch occupied a place on the scale close to the syllable language prototype:

Table 5**:** indicators of table 1 showing that OHG and Old Dutch behaved like syllable languages

nr.	*indicator*	*reason*
1	syllable structure	much less complex than in Modern High German and Modern Dutch, many open syllables
2	syllable boundaries	clear syllable boundaries
3	geminates	exist in heterosyllabic position
6	phonotactics	no final devoicing in OHG
7	vocalism	no vowel reduction in OHG and Old Dutch
8	vowel harmony, umlaut	productive in OHG

It can be concluded that, while Modern High German and Modern Dutch are quite clearly word languages, Old High German and Old Dutch were still relative syllable languages.[10] Hence, their evolution is the opposite of that of French after the Old French period.

6 *Conclusion*

In this article I have shown that the (putative) strong intensity accent of Gallo-Romance cannot have had a Frankish source, because around the 5th century, the period in which this putative borrowing would have taken place, Frankish, by the same criteria, cannot have had a strong intensity accent. Another, independent, reason that was advanced is that if the strong accent had indeed been borrowed from Frankish, the root-initial stress would also have been borrowed. And this did not happen.

In addition to this, I showed that the entire distinction between 'melodic' and 'expiratory' accent is outdated, because it has been shown to be linguistically irrelevant due to the imperceptability of intensity gradation.

Using the typology introduced by Auer and Uhmann, I then showed that evolution in French and in West-Germanic are changes in the entire prosodic systems of these languages, along the axis of syllable and word languages.

It was shown that from around the 7th century onwards, French and Frankish developed autonomously in opposite directions; while French has become a syllable language, High German and Dutch, the descendants of Frankish, became word languages.

In retrospect, it is clear that the authors of works that attribute vowel reduction and deletion and a putative strong intensity stress in Old French to the influence of Frankish were the victims of the outdated ideas prevalent in phonetics and historical linguistics in the last quarter of the 19th century and the first half of the 20th century. However, given the advances in experimental phonetics and language typology since, there is no excuse not to abandon these ideas.

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[10] Nübling and Schrampke (2004:290) refer to Frey (1988) who provides arguments that OHG is a syllable language. At the completion of this article, I became aware of a recently published book, Szcepaniak (2007), which is totally dedicated to the evolution of High German from a syllable to a word language.

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