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Old French Stress Patterns and Closed Syllable Adjustment

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The alternation between [ɛ] and [ə] or Ø in Modern French described by Dell (1973: 195-219) as a special case of a more general rule of *Closed Syllable Adjustment* has received many theoretical reanalyses (cf. references in Morin, 1988, who argues that the alternation is not really a phonological process in Modern French). The formerly reduced vowel [ə], or its recent reflex Ø, is normally the reflex of an Old French pretonic vowel; [ɛ] corresponds to vowels which were either tonic or countertonic at the same period:

- (1) *Alternation [ɛ] ~ [ə]/Ø in Modern French:*
- | | OF tonic position | OF pretonic position | OF countertonic position |
|----|-------------------------------|----------------------|--------------------------|
| a. | p[ɛ]sé (3sg pres ind) | p[ə]ser (inf) | p[ɛ]s[ə]riez (2pl cond) |
| b. | (il) app[ɛ]lle (3sg pres ind) | app[ə]ler (inf) | app[ɛ]ll[ə]ra (3sg fut) |
| c. | hot[ɛ]l | hot[ə]lier | hot[ɛ]ll[ə]rie |

The alternating pattern above appears to reflect former properties of French whereby the tonic and countertonic positions are prosodically strong and the pretonic position weak — at least in some specific syllable sequences. The evolution could have been either a reduction of [ɛ] — or rather its ancestors — in weak position, or a strengthening of [ə] in strong position. Neither one of these processes is still productive: [ɛ] may now appear in pretonic position, e.g., *laitier* [letje], and [ə] in countertonic position, e.g., (vous) *écheveliez* [eʃəvɛlje]. The alternation is confined to a small set of morphemes, but was originally more important. For instance, Littré (1863-73) and Hatzfeld & Darmesteter (1890-1900) noted a century ago alternations such as (2) which are now almost completely obsolete:

(2) Alternations in Littré (1863-73), Hatzfeld & Darmesteter (1890-1900):

tonic position	pretonic position	countertonic position
a. ch[ɛ]f "head"	ch[ə]vet "church-head"	ch[ɛ]vécier "church-head keeper"
b. br[ɛ]f "brief"	br[ə]vet "small brief, brevet, patent"	br[ɛ]vétér "to give a title, to brevet, to patent"
c.	s[ə]m[ɛ]lle "sole"	ress[ɛ]mêler "to resole"

Other historical evidence, however, appears to support a quite divergent interpretation of the prosodic patterns responsible for "closed syllable adjustment". Thurot (1880: 139-141) observed that in countertonic position, [ə] has been competing with [ɛ] ever since the 17th century, at least before [t] in future/conditional forms and before the suffix *-erie*, e.g. (il) *achètera* [aʃɛt(ə)ra] ~ [aʃ(ə)t(ə)ra] and *briqueterie* [briket(ə)ri] ~ [brik(ə)t(ə)ri]. The pronunciation with [ə] or Ø in countertonic position was the official norm according to several 19th century grammarians (Thurot 1880, Lesaint 1890: 37-43). The norm now favors countertonic [ɛ], although the pronunciation with [ə] or Ø is still very frequent, and, for some verbs like *acheter*, the most frequent one (Morin 1978a wrongly assumed that the non-normative pronunciation could only be an innovation). The current countertonic schwa of *breveter* [brəv(ə)te], *écheveler* [eʃəv(ə)le], *ressemeler* [rəsəm(ə)le] thus need not be an analogical extension of the pretonic schwa of (il) *brevette*, (il) *échevelle*, (il) *ressemelle*. It may well reflect an earlier pronunciation where the countertonic vowel regularly became a schwa as in *ensevelir* [āsəv(ə)lir], *Geneviève* [ʒən(ə)vjev] or *Gennevilliers* [ʒən(ə)vilje] which lack analogical models.

In this paper, I would like to examine the earliest evidence for the alternation [ɛ] ~ [ə] in French, the prosodic patterns which created it, and its status in the grammar of 13th-century Old French.

1. The notation for schwa in Biblical glossaries

1.1 The first French documents written with the Latin orthography used the letter *e* to represent different kinds of mid front unrounded vowels as well as the reduced vowel [ə] and are thus of limited interest for the present analysis. The first attempts to modify this orthography began in the 16th century and eventually lead to the present accent system which still retains some of the original ambiguity, e.g., *e* represents either [ə] or [ɛ] in *papeterie*, [ə] in *interpeller* and [ɛ] in *rebeller*. Some 16th century spelling

reformers, however, proposed and used systems which clearly distinguished [ə] from the mid front unrounded vowels and their work can be used to establish the distribution of the vowels [ə], [e] and [ɛ] at that period.

Earlier evidence for the distribution of [ə] can be found in medieval Biblical glossaries, where French is transcribed with Hebrew characters and where [ə] is distinguished from the other vowels. The linguistic interpretation of such documents raises the same problems as those written with Latin characters. The surviving manuscripts may reflect several chronological and dialectal strata: they probably are rejuvenated, recast or compiled copies of older texts not necessarily written in the dialect of the copyists. Several persons, who did not necessarily have the same linguistic usage, participated in the actual production of one given copy: several copyists, punctuators, and at least one corrector and/or revisor (cf. Banitt 1972: 58-71). The copyists were also influenced by the — usually conservative — Latin orthography and may also use, e.g., in the Basel glossary, *u* <s> as a diacritic for length as in אֶשְׁטָרָה <astre> *altre*, probably pronounced [ātre]. Latin orthography, of course, could not have any influence on the choice between schwa and mid front unrounded vowels and can be dismissed in the present study.

The interpretation of the Hebrew script may also be ambiguous or indeterminate. Several specific cases are relevant to the present study. Schwa under a consonant indicates that this consonant is either followed by another consonant or by the vowel [ə], thus פֶּרִי corresponds to either [fəre] or [fre] *ferai*. A geminated consonant is normally written as a single consonant. Similarly, two identical consonants separated by [ə], although sometimes repeated as in אֶפְרָרֶץ <eperərəç> *espererez* (B. 3048),¹ are also normally represented as a single consonant. For instance, אֶבְרָא <abevra> (B. 1520) is a future form of *abever* and certainly represents [abevrə] while אֶבְרָא <abəvra> (B. 2739) is a preterit and represents [abəvra]. Some of the graphic conventions used to adapt the Hebrew spelling to Old French sounds are now difficult to interpret. The combination schwa-yod יְ is read as a variant of [ə] by Siskin (1981: 11) in the Parma glossary. Its usage in the Basel glossary, according to Banitt (1972), results from a divergence between the copyist who wrote down the yod י, intending the punctuator to add a *šere* to give the normal representation יְ of <e>, and the latter who instead wrote a schwa to indicate <ə>. Conversely, Banitt also interprets all occurrences of *šere* without accompanying yod י as yet another divergence: here the copyist intended a schwa, and accordingly did not write any yod י, the punctuator nonetheless chose to

write a *šere* for the vowel <e>, even though yod was not indicated among the consonants. I will adopt Banitt's interpretation in my analysis of the Basel glossary.

The presentation of the glosses in these glossaries follows, as a rule, the order of appearance in the Bible of the words or expressions to be explained. As a consequence the same words may be glossed several times, e.g., there are 32 occurrences of the noun <plənurə> *plaine* and also 32 inflected forms of the verb <rəvələr> *rebeller* in the Basel glossary. Not all words are so abundantly repeated, unfortunately, as only the multiplicity of occurrences guarantees that a given form represents the intended transcription of their authors.

Only two glossaries, to my knowledge, have been completely edited: the Paris glossary, ms 302 (Lambert & Brandin 1905) and the Basel glossary (Banitt 1972), both of them written at the beginning of the 13th century, respectively in Eastern France and Champagne, according to their editors. I have also consulted the partial edition of the 14th century Parma glossary, ms 2780 (Siskin 1981). The edition of the Paris glossary contains the editor's transliteration of the French glosses but not their Hebrew transcription. It includes a partial index, which does not always adopt the same transliteration system as the text of the glossary, and a very limited critical apparatus. These features make it less reliable than the Basel glossary which includes the original Hebrew transcription, the editor's transliteration, a rich and precise critical apparatus, but no general index. For the present analysis, I had the Basel glossary transcribed on a computer data bank.

The editors of these glossaries have adopted different conventions for their transliterations. In this analysis, I have respected the editors' choice and have only uniformized the symbols as appears in Table 1.

The correspondence between different transliterations, which are represented here between angle brackets <...>, is not straightforward. For instance, *כֶּהְוָה would be transliterated <chēvā> by Banitt but <chejva> by Lambert & Brandin, a difference which may or may not correspond to a difference in pronunciation. The absence of Hebrew transcription for French in Lambert & Brandin's work makes the comparisons difficult.

1.2 Although the Hebrew script contains a special symbol for schwa, transliterated as <ə> by Banitt and by Lambert & Brandin when it corresponds to a graphic vowel in contemporary Christian manuscripts, this does not guarantee that graphic <ə> necessarily corresponds to [ə] and con-

Table 1

	Basel gl.		Paris gl.		Remarks
b	b	ב ב	b	ב ב	
v	v	בּ	v	בּ	
g	g	ב ב	g	ב ב	
j	j	י	j	י י	OF[(d)ʒ]
d	d	ד	d	ד ד	
h	h	ה	h	ה	word-final ה is not transliterated
v	v	ו ו	v	ו ו	
z	z	ז	z	ז	
t	t	ט	t	ט	
i	y	י י	y	י י	yod
j	j	י			OF[(d)ʒ]
l	l	ל	l	ל	
λ	ll	לל			palatal l
m	m	מ מ	m	מ	
n	n	נ נ	n	נ	
ɲ	ñ	נ			
p	p	פ פ	p	פ פ	
f	f	פ	f	פ	
ç	ç	צ	ç	צ	OF[(t)s]
c,q	c,q	ק	k	ק	
ch	ch	כּ	ch	כּ כּ	OF[(t)ʃ]
r	r	ר ר	r	ר	
s	s	ש ש	s	ש	
ʃ	ʃ	ש			
a	a	א	a	א	
ɛ	ɛ	א	ɛ	א	
ā	ā	אָ	ā	אָ	word-final א is not transliterated
o	o	ו	o	ו	
ō	ō	וּ וּ			
u	u	ו	u	ו	
ou	ou	וּ וּ	ou	וּ וּ	
e	è	אָ	é	אָ	
ē	ê	אָ	è	אָ	
ə	e	אָ	e	אָ	
i	i	אָ	i	אָ	
ü	ü	אָ	ü	אָ	
ö			ö	אָ	

versely that [ə] always appears as <ə>. Indeed it will appear that <ə> was used to represent not only [ə] but also, in relatively few cases, [ã]. Conversely, although [ə] was normally transcribed <ə>, it may sometimes appear as <a> in the Basel glossary, or <e> and <o> in the Paris glossary.

The graphic conventions concerning [ə] can only be established by examining how they are applied to vowels which have been relatively stable in the history of French, as earlier [ə]'s have often been replaced by [e] or [ɛ] under various conditions. This happens in initial syllables, e.g., in *bénin*, *défendre*, *désir*, *féru*, *pépie*, *pépin*, *prévôt*, *séjour*, *trésor* which were still often pronounced with [ə] in the 16th century (Thurot 1880: 120-139). A learned influence is often assumed, but cannot account for all cases as Fouché (1969: 432) rightly observes, e.g., [e] in *béton* or *déluge*. The change is also attested before adverbial *-ment*, e.g., *conformément*. Analogy is responsible for the replacement of [ə] by [e] or [ɛ] in pretonic position, e.g., *verreux* after *ver*, *regretter* after *regret* or (*il*) *regrette*. In counter-tonic position, the original distribution is obviously not clear (and is the object of the present research). In tonic and post-tonic positions, however, the distribution of [e/ɛ/æ] and [ə] is stable in most dialects of French. Tonic vowels never became [ə], except when stress was moved. Stress retraction is attested in some Occitan and Francoprovençal dialects, but not in Northern dialects. Stress was moved forward, but apparently only before the enclitic *-je* and on the enclitic *-le*, in which case a historical [ə] may become [e], e.g., in *chanté-je* and, sometimes, *dis-le* [dile]. Post-tonic schwas also became [e] or [ɛ] in Walloon and Picard in some very specific morphological and syntactical environments (cf. Morin 1986). Word-final syllables, in which one can find both tonic and post-tonic vowels in similar graphic environments, thus offer an excellent context to interpret the graphic usage of the two manuscripts.

Graphic <ə> in word-final syllables is consistently used to represent post-tonic [ə], e.g., in <sechəs> *sèches* (fem pl), and — followed by <t> — the 3pl post-tonic ending *-ent*, e.g., in <voldrət> (*ils*) *voldrent* (pret). In the Basel glossary, it also sometimes appears before <n> to represent a stressed nasalized vowel [ã], e.g., in <parəmənt> *parement* or <vənt> *vent*. It never corresponds to any other stressed vowel.² The use of <ə> to represent a nasalized vowel may indicate that [ə] was partly nasalized and should be more accurately described as [ã], at least in post-tonic position. The loss of [n] in the 3pl ending *-ent* after an unstressed [ə], which probably

occurred earlier, did not create a phonological distinction with other schwas if, as it appears, they were already nasalized. French schwa has actually been described as a nasalized vowel by Palsgrave in the 16th century. The "spontaneous nasalisation" of reduced vowels is also attested in other modern Gallo-Romance dialects (cf. Duraffour 1932: 19-23, Escoffier 1958: 61) and one can reasonably assume that it could have occurred earlier in the history of French.

Conversely, post-tonic [ə]'s are always transcribed as <ə>. There can be no doubt, therefore, that scribal INTENT and PRACTICE were remarkably reliable: there are no confusions between [ə] and any of the other non-nasalized vowels in tonic and post-tonic positions.³ The graphic variation found between <ə> and other vowels in other positions, therefore, should not be viewed as a simple form of scribal indeterminacy, but is certainly linguistically significant. I now examine the three most frequent variations of <ə> (1) with <a, ā> before nasal, (2) with <ɛ/a> before the suffixes *-ment* and *-resse* and before future-conditional endings, and (3) with <e, ē>.

The use of <ə> before a nasal to represent a nasalized [ã] in the Basel glossary is not only found in tonic position. The dominant notation, however, is <ā> or <a> and only rarely <ə>. In the Paris glossary, OF *en* and *an* appear as <on>, e.g., <vont> *vent* — the passage of [ã] to [ō] is not infrequent in Eastern dialects (cf. Aub-Büscher 1962 who describes a dialect where this change is completely regular) and may have already begun at this period. The fact that graphic <o> is sometimes used in this glossary instead of <ə> before the suffix *-ment*, e.g., in <pavomont> ~ <pavəmont> *pavement*, may also indicate an allophonic nasalization of schwa.

In the Paris glossary, graphic <ɛ> is relatively rare and almost always a variant for <ə>. It is normally found before a future-conditional ending, e.g., <châtiera>, <gerojeront>, or the suffix *-ment*, e.g., <delicēmont>, when the stem ends with a vowel or a diphthong. It is best interpreted as a notation for a low allophonic variant of [ə]. In the Basel glossary, the variant <a> of <ə> is found in similar contexts, viz. before the future-conditional endings, the ending *-resse*, e.g., <otələrēse>, and the ending *-ment*. The influence of the preceding context is not as determinant, however. The presence of a stem-final vowel or diphthong favors the presence of <a> only in the case of future-conditional verbs: <a> occurs in 40% of the 73 future-conditional forms with a stem-final vowel or diphthong but only in 13% of the other 1121 future-conditional forms. Before the suffix *-ment*,

<a> occurs in 16% of the 644 occurrences, and the preceding context is irrelevant. Here also, the alternation between <ə> and <a> before the future-conditional endings and before the suffixes *-resse* and *-ment* probably indicates a simple allophonic variation. The same alternation, however, is also found in a few isolated lexical items, mainly before a nasal consonant, e.g., in <məmələ> ~ <mamelə> *mamelle*, and after a palatal affricate, e.g., <chəvet> ~ <chavet>, where it is probably not allophonic. The same variation is not infrequent in Christian manuscripts of the same period; the graphic alternation <ə> ~ <a> here may reflect a linguistic variation between two phonologically distinct vowels, which is sometimes retained in Modern French, cf. the alternation *faner* ~ *fenaison*.

Finally, the alternation between <ə> and <e, ē> is also frequent in both glossaries. However, it is typically LIMITED to forms where [ə] is paradigmatically related to tonic [e/ɛ/æ], e.g., <pəchéç> ~ <peché> *péchés* corresponding to *<pechə> (*il*) *pèche*. Alternations are not normally found elsewhere, e.g., in <səre> (*je*) *serai* or <məzurə> *mesure*. The only two exceptions are (1) the prefix *de-* written <də-> or <de-> — which continues two historically distinct prefixes *de-* and *des-* — and (2) <sənor> ~ <sejor> *seignor*. The fact that the alternation is limited to specific words confirms the reliability of scribal practice. If the alternation resulted from scribal distraction or from the difficulty of distinguishing [ə] from [e/ɛ] in unstressed position, it should appear equally randomly in all forms. The graphic alternation here necessarily corresponds to a genuine case of linguistic variability, which will be examined later.

But before, it is important to stress that [ə]'s which were not in paradigmatic relationship with a stressed [e/ɛ] are invariably represented as <ə>. The lists below give examples from the Basel glossary, whether they survive as [ə] in Modern French, as in (3), or [e/ɛ] and even [i] as in (4):

- (3) <aməçon> *hameçon*, <dəgre>, <dəvin>, <dəvisə>, <chəmin>, <fāsəte> *fausseté*, <fənētrə>, <fəre> (*je*) *ferai*, <mənu>, <mənuizier>, <məzurə>, <nəvot> *neveu*, <pəlotə>, <pətit>, <səgond> *second*, <səmenə> *semaine*, <səmondre>, <sənētrə> *senestre*, <səre> (*je*) *serai*, <sətier>, <vənin>.
- (4) <dəbris>, <dəgāt>, <dəliçə>, <dəzerter>, <dəsoler>, <fəlon>, <fənir> *finir*, <prəsər> *presser*, <məsagə> *message*, <qərir> *quérir*, <prəvōt>, <trəzor>.

From this list, we can conclude that the partial change of [ə] to [e/ɛ] in initial syllables had not yet begun in 13th century French, except when paradigmatic analogy is involved.

2. Schwa reduction in Early Old French

We can now conclude from the scribal evidence found in the two glossaries that the alternating pattern (1) of Modern French already existed in 13th century Old French. At this period, however, the alternation was more general, as appears in the examples below:

(5) Alternating patterns in the Basel glossary:

tonic position	weak position	non-tonic strong position
a. <levə> 3sg pres ind	<ləver> inf	<levəront> 3pl fut
b. <sechə> imp	<səcher> inf	<sechərā> 3sg fut <sechəreçə> secheresse <sechəte> secheté
c. <net>	<nətoje> past part <nətojərās> 2sg fut	<netəte> neteté
d. <profetə> prophete	<profəçia> <profəçije> past part <profəçijərās> 2sg fut	
e. <cher>	<anchəriç> past part <anchərīre> 1sg fut	

The analysis of the alternation between <e> and <ə> in the glossaries raises three questions: (i) is it phonological, (ii) assuming that it is, what is the underlying form of alternating vowels, and (iii) what are the conditioning factors? It is usually assumed that in Early Old French (EOF), the vowel [ə] in these alternations is the result of a transparent phonological process which reduced the vowels [e, ɛ] in some specific contexts. No analysis, to my knowledge, has ever been explicitly proposed for 13th century Old French. This section re-examines the traditional analyses for EOF. Section 3 will resume the analysis for 13th century OF as it appears from the two glossaries.

2.1 The vowel [ə] results from several reduction processes which lead to various alternations in Old French: [ə] alternates with [a] in (*il*) *ach[a]te*: *ach[ə]ter*, with [æ] in *host[æ]l*: *host[ə]lier*, with [ɛ] in (*il*) *ap[ɛ]le*: *ap[ə]ler*, with [je] in (*il*) *l[je]ve*: *l[ə]ver*,⁴ with [e] in *m[e]tre*: (*vous*) *m[ə]tez*, with [eɪ] in (*il*) *p[eɪ]se*: *p[ə]ser*, with [i] in *ff[i]n*: *ff[ə]nir*, and with [o] in (*il*) *corr[o]ce*:

corr[ə]cier. These alternations are not necessarily phonologically active in EOF.⁵ The alternations [i] ~ [ə], [a] ~ [ə], and [e] ~ [ə] are phonologically opaque. The alternations [ɛ] ~ [ə], [je] ~ [ə], and [e] ~ [ə], however, are probably still transparent, as assumed by Herslund (1976: 111), Horne (1976: 299) and Walker (1981: 40). Finally, the alternation [æ] ~ [ə] probably had the same phonological status as the three preceding ones.⁶ Herslund, Horne and Walker proposed that [ɛ], [e] and [je] are reduced to [ə] in weak prosodic position.⁷ They diverged, however, on the prosodic structure of EOF. In Herslund's analysis, schwa reduction occurred in open PRETONIC SYLLABLES. The examples (5d) and (5e), however, show that schwa reduction was not restricted to pretonic syllables in 13th century OF and presumably neither in EOF. The [ɛ] of *profete* and the [je] of EOF *chier* — which later became *cher* — alternated with [ə] found in all the forms of the verbs *profecier* and *encherir*. In particular, the reduced vowel can be counter-tonic, as in *prof[ə]cié*, or even three syllables away from the tonic syllable, as in *prof[ə]cieras*. In Horne's and Walker's analyses, schwa reduction occurred in any open NON-TONIC SYLLABLE. Here again, examples such as (5b) where counter-tonic [e] is not reduced in *sechera* indicate that this generalization does not hold for 13th century OF and presumably neither for EOF.

The distribution of [ə] in EOF cannot be inferred from the spelling and must be extrapolated from later texts. I assume that the distribution observed in the two 13th century glossaries continues an earlier situation and that the variability between <ə> and <e> (mentioned in section 1.1 and examined in more detail in section 3) reflects an analogical regularization which presupposes an earlier, more regular, phonologically-governed distribution. In other terms, I assume with Herslund, Horne and Walker that the alternation between [e, ɛ, je, æ] and [ə] was phonological in EOF, and that it can be expressed as a reduction of underlying /e, ɛ, je, æ/ in prosodically weak positions.

2.2 The prosodic pattern of EOF, however, is more complex than assumed in these previous studies (which were not specifically concerned with the problem). The alternations found in (5) clearly indicate the existence of an alternating stress pattern, which can be further exemplified by the paradigm of *reveler* 'rebell' in (6), where the vowel in the first syllable is alternatively [ə], [e] and [ə] when it is respectively one, two and three syllables away from the tonic syllable:

(6) *Alternating patterns in reveler 'rebell' in the Basel glossary:*

- a. *[rəvelə] 3pl pres ind
- b. <rēvələr> inf
- c. <rəvel[ə]reç> (written <rəvelareç>) 2pl fut

Two prosodic models have been proposed for Modern French which define an alternating stress pattern. Verluyten (1982: 70, 209-254) proposed a model in which syllables are alternatively strong and weak (noted *s* and *w* in the examples below), starting from the (strong) tonic syllable. This analysis — whatever its merits for Modern French — does not extend to Old French. It correctly accounts for the stress patterns of forms in which all the vowels preceding the tonic vowel are non-high front vowels as in the paradigm of *reveler* in (7a). When other vowels intervene, however, the stress pattern is not strictly alternating, as in the paradigm of *profete* in (7b); in this prosodic model, the antepenultimate syllable of *profecié* should be strong, when in fact, it was reduced to [ə].

- (7) a. w s w s w s w s w s
 | | | | | | | | | |
 r ə v é l ə r e v ə l æ r r ə v e l ə r é t s
- b. ? s w ? w ? s
 | | | | | | |
 p r ɔ f é t ə p r ɔ f ə t s i é

Selkirk (1978) proposes an intermediate metric constituent, the foot, which defines the prosodic patterns of Modern French. These feet are normally monosyllabic, but may contain two syllables when the second one is open and contains the vowel [ə]. In Selkirk's analysis, however, the alternation between [ɛ] and [ə] is not directly related to the prosodic strength of syllables, but depends on the internal structure of a foot. For instance the first syllables of *sevré* [sə]_f, [vré]_f, and of (*il*) *sèvre* [səvrə]_f, have the same underlying representation and are both prosodically strong,⁸ but are respectively realized [ə] and [ɛ]. This analysis — whatever its merits for Modern French — thus does not extend to Old French if the alternation is to be analyzed as a form of vowel reduction in weak prosodic position.

For Old French, it is preferable to postulate right-dominant binary feet, i.e., constituents in which the right syllable is strong. Thus, *sevré* would contain exactly one foot [səvrə]_f, in which the first syllable is weak; in *sèvre*, however, the first syllable is prosodically strong because it consti-

allows /ə/ to be a regular underlying vowel. The prosodic model, furthermore, predicts that one of these [ə] should be in a strong prosodic position; for instance, if *sevelir* were underlyingly */səvəlir/, it would contain two feet [sə]_f and [vəlir]_f, the first of which contains a schwa in a strong prosodic position. The difference between prosodic strong and weak schwas need not appear in any written document.

Indeed, it is not impossible that some, or even most occurrences of the prefix *re-* in EOF were pronounced with a [ə], even when the following syllable also contained a [ə]. One should, however, carefully distinguish several prefixes *re-* in Old French, whose statuses may be quite different. In some of its uses, *re-* behaved like the clitic pronouns *le*, *me*, *te*, etc. (Ménard 1973: 265, cf. also Remacle 1956: 9 for modern dialectal forms corresponding to **allez-re-en*!). Its pronunciation could have thus been influenced by these. In its other uses, however, *re-* is more clearly a prefix, as in *resener*, *retenir*, *receler*, *requerir*, *recevoir*. In the two biblical glossaries, *re-* regularly appears as <rə> before all verbs. The only two exceptions are the verbs *remanindre* (Paris gl.) — used only in its present participle form *remenant* for 'left over' — and *reveler* (Basel gl.), where *re-* is sometimes written <re-, rē-> when the following syllable contains a [ə]. This suggests that the prefix *re-* originally had an underlying vowel /e/, reduced to [ə] in weak prosodic position, which was later reanalyzed as /rə-/ and thus ceased to alternate. In *remenant* and *reveler*, the reanalysis was delayed because the status of *re-* *qua* prefix was less transparent. Even for these two verbs, the variant <rə-> is relatively frequent: four of the seven occurrences of *remenant(s)* given in the index appear as <rəmənent, rəmənont, rəmənons> in the Paris glossary (I use here the transliteration found in the text or in the critical apparatus) and twenty-eight of the thirty occurrences of <rəvələr, rəvələnt, rəvèle, rəvəla, rəvələrət, rəvələstəs> in the Basel glossary.¹⁰

The phonetic interpretation of <rə-> as [rə-] in the two Hebrew manuscripts, however, cannot be completely assured. One cannot exclude that this spelling reflects a scribal convention requiring that the most common allomorph of a grammatical word should be used in all contexts. For instance, the feminine article *le* is normally written with a final <ə> even when the following noun begins with a vowel, but was probably not pronounced at that time. A similar treatment for the prefix *re-* is difficult to establish. It is seldom found before a vowel-initial stem in the two manuscripts. The only pertinent stem is <avejler> *esveillier* found in the Paris

glossary, before which *re-* is always written <rə->, without elision of the schwa. Assuming that there existed a scribal convention to uniformly write *re-* as <rə->, it certainly was not systematic as evidenced by the forms of *remanindre* and *reveler*. It is therefore significant that the alternation <ə> ~ <e, ē> should be limited to these two verbs.

2.4 In the analysis proposed here, I have assumed that the alternation between [e, ε, je, æ] and [ə] in EOF was essentially phonological, and I have shown that it could be analyzed as a process of vowel reduction if one postulates a relatively simple prosodic model. It should be emphasized, however, that this analysis is based on later data: the alternation between <ē, e> and <ə> in the two 13th century manuscripts for which we have a graphic distinction between front vowels and [ə] is 'almost' phonologically determined. Deviance from the phonologically regular pattern appears to result from analogical regularization. One is thus legitimated to hypothesize a status ante when the alternation was completely phonological. The next section examines how the actual alternations observed in the two manuscripts can be historically related to this earlier stage.

3. The alternation [e, ε, je, æ] ~ [ə] in 13th century Old French

The vowels [e, ε, je, æ] survive in Modern French as [ε] < EOF [e, ε], [e, ε, je, je] < EOF [je] and [e, ε] < EOF [æ]. Selkirk (1972) suggested that the reflexes of the EOF alternation [e, ε, je, æ] ~ [ə] should still be analyzed as a form of vowel reduction in Modern French. Dell (1973), however, argued that only (some of) the alternations between [ε] and [ə] were still phonological, and that they should be analyzed as the adjustment of an underlying /ə/ to [ε]. The other surviving alternations were added to the ranks of other phonologically irrelevant alternations such as [a] ~ Ø in *savate* ~ *savetier*. One of the reasons which prompted Dell's reanalysis was the existence of [ε] in contexts where /e/ should have been reduced to [ə], as in *laitier* [letje], if schwa reduction were still an active phonological process of Modern French. These unreduced vowels continue (1) EOF diphthongs [aj] > [ε], as in *laitier*, (2) sequences [es, εs, əjs] > [ē] > [ε] after the loss of preconsonantal [s], as in *fester* > *fêter* [fête] > [fete], (3) sequences of two vowels [ai, ee, ...], as in *traîner* > *traîner* [trâne] > [trane], and (4) some EOF [ə], as in *presser* [prəse] > [prese]. His reanalysis was also possible because a large number of the EOF alternations converged onto the alternation [ε] ~ [ə].

The changes which motivated Dell's reanalysis had already begun in the 13th century and can be found in the two manuscripts examined here. I will show here that the reflexes of the alternation [e, ɛ, ie, æ] ~ [ə] ceased to be analyzable as a form of vowel reduction at that period. Dell's analysis, by which an underlying /ə/ came to be realized as a full vowel in some contexts, however, was not applicable. The alternations appear to have been mostly morphological.

3.1 A first change, not recognized in the current norm of Standard French and not discussed by Dell (cf. Morin 1988), is the generalization of [ə] in prosodic strong position. We have seen that the occurrence of [ə] in two consecutive syllables was not necessarily excluded in EOF, in particular when the prefix *re-* was involved. The following few forms with [ə]'s in consecutive syllables could be simple scribal mistakes: <chavētēnə> (B. 157), <chalaməlānç> (B. 1604, where the second <a> must represent a [ə], cf. <chamel>, pl <chaləmīās>), <otelārēsəs> (B. 1645), <jənərəçion> *generation* (B. 9311, this word is also rendered as <jərənəçion> in B. 4289) and <panətərolə> (P. 71.4). The various transcriptions of *seneschal*, <sənəchāl> (B.600 and 2136 - copyist), <sənəchāl> (B. 2136 - punctuation) and <senəchāt>, may reflect a variation in the pronunciation. The first variant is historically regular. In the other variants, the long penultimate vowel created by the loss of preconsonantal *s* was reduced to [ə] (a change discussed later). The [ə] in the first syllable was retained in <sənəchāl>, suggesting that it had then been analyzed as /ə/. (On the other hand <senəchāt> would suggest that it was still analyzed as /e/.) A similar evolution is observed for Old French *menestrel*/*menestrier* which survives as [mənətrɛl] in the work of Peletier du Mans (16th century), and [mœntre] in modern Champagne dialects (cf. Baudouin 1887: 220).

The existence of a [ə] in non-tonic strong position which alternates with one of the vowels [e, ɛ, ie, æ] (or rather their current reflexes) is, on the other hand, incompatible with the analysis proposed for EOF. For instance, the stem of *despecier* in 13th-century Old French should have been /dēpiets-/ to account for 2sg imp <depięç>. In future forms, e.g., *despece-rez* and in the derived noun *despecement*, the countertonic vowel should be prosodically strong and appear as [e] (cf. note 7), but not as [ə]. Although relatively infrequent for most verbs, this situation is not exceptional. Table 2 gives a list of the most frequent verbs in the Basel glossary for which <e, ē> alternates with <a> (I have excluded verbs where the alternation

Table 2. Reduction in the verbal paradigms of the Basel glossary.

	weak position		non-tonic strong position	
	percentage	occur.	percentage	occur.
<i>acheter</i>	100%	6	50%-0%	4
<i>mettre</i>	100%	6		
<i>esmerer</i>	100%	7	(0%)	1
<i>ferir</i>	100%	10		
<i>querir</i>	100%	10		
<i>esperer</i>	100%	8	43%-0%	7
<i>apeler</i>	100%	5		
<i>renouveler</i>	100%-83%	6	17%	6
<i>reveler</i>	96%-93%	30	12%-0%	9
<i>celer</i>	94%	18	17%-0%	6
<i>orguener</i>	100%	5	(33%)	3
<i>semer</i>	100%	7		
<i>tenir</i>	100%	18	(0%)	3
<i>venir</i>	100%	27		
<i>prendre</i>	100%-95%	22	10%-0%	10
<i>mener</i>	94%-88%	17	50%-9%	12
<i>chever</i>	100%	8		
<i>lever</i>	100%	27	20%-7%	15
<i>(re)cevoir</i>	100%	11		
<i>crever</i>	100%-95%	23	(0%)	2
<i>sevrer</i>	100%-94%	18	50%-17%	6
<i>boire</i>	100%-85%	7		
<i>esserver</i>	100%-83%	6	(0%)	2
<i>(a)bevrer</i>	87%-63%	8	13%-0%	8
<i>trecier</i>	100%-50%	6		
<i>despecier</i>	97%	32	71%-53%	17
<i>sechier</i>	94%-82%	17	10%-0%	21
<i>drecier</i>	90%-72%	11	25%-0%	4
<i>pechier</i>	83%-66%	6	(0%)	3
<i>presser</i>	80%-70%	10		

occurs before a palatal [λ] or [ɲ], e.g., *conseiller*, which should be analyzed separately). Table 2 gives the percentage of reduced forms, followed by the total number of relevant forms. Two percentages are given when copyist and punctuator diverge: the highest figure corresponds to the logical union and the lowest to the logical intersection of reduced forms; for instance 71%-53% indicates that 71% of the relevant forms have been transcribed with a <ə> by either the copyist or the punctuator, and 53% by both of them.

Of these verbs, *acheter*, *esperer*, *mener*, *sevrer* and *despecier* are the most affected. Similar counts are not yet available for the Paris glossary. As a point of comparison, however, I give in table 3 the same figures for *despecier* in the Paris glossary (the examples given in the index are not statistically representative).

Table 3. Reduction in the verbal paradigms of *despecier* in the Paris glossary

Paris gl.	weak position		non-tonic strong position	
	percentage	occur.	percentage	occur.
<i>despecier</i>	100%	35	34.5%	29

The fact that the passage of non-tonic [e] to [ə] is more frequent for some specific verbs indicates that this was probably not a regular phonetic change. If it resulted, e.g., from a modification of the prosodic system of the language whereby non-high front vowels would have become weak in all non-tonic positions, it should have applied uniformly to all words.

3.2 Indeed, the reduction of non-high front vowels is no longer totally productive during the 13th century. Table 2 indicates that a non-reduced vowel (probably [e] or [ɛ]) may be found in pretonic position in the inflected and derived forms of some, verbs, and in particular (a)*bevrer*, *tre-cier*, *sechier*, *drecier*, *pechier* and *presser*. These forms are relatively infrequent, but the regularity with which they are found for a large proportion of verbs indicates that the process which would eventually eliminate [ə] from the paradigm of some of these verbs had already begun. This process was not phonologically conditioned, as [ə] — when it did not alternate with [e] — was retained in similar contexts, e.g., *message*, *mecine* or *tresailir*. The influence of the base *net* is obvious in the regularization of *netoier*/*nezoier*. Of the 10 occurrences of *netoier*, 6 are written by the copyist with

a <e> in the first syllable; all of the occurrences of *nezoier*, for which the phonological link with *net* was not as obvious, are uniformly written with a <ə> by both copyist and punctuator. Similarly, the influence of *bel* in the analysis of the verb *embelir* is responsible for the pretonic <e> in almost all of the forms found in both glossaries; in *beleste*, however, the semantic link with *bel* is not as strong, and the historical [ə] is retained. (The arbitrariness of the regularization can also be highlighted by the different development of *encherir*, where [ə] is retained in spite of *cher*, contrary to the regularization observed in *embelir*.)

The three other changes which prompted Dell's reanalysis, (1) monophthongization of EOF diphthongs [aj/ej] as in *laitier*, (2) loss of preconsonantal *s* in the sequences [es, ɛs, ajs] as in *fester* and (3) reduction of [aj] and [ee] sequences, are found in both manuscripts. The resulting vowels, as a rule, are not reduced to schwa, e.g. (1) in *chaitiver*, *baissier*, *laissier*, *maison*, *plaissiz*, *enlaidir*, (2) *flaistrir*, *peschier*, *mesler*, *raisnier*, *vestir*, and (3) *traïtor*, *traïner*, *desgaïner*, *seeler*. The last two changes created long vowels which often survived until the end of the 19th century in Central French. If these vowels were also long in Champagne and Eastern dialects, length could be one of the factors which prevented their reduction. The monophthongs which continue [aj/ej], however, have normally merged with the other short front-mid vowels. There are no reasons to believe that, in the 13th century, they had specific properties which distinguished them from both long and short vowels. Indeed, I would like to claim that the analogical regularization we observed in the paradigms of the verbs (a)*bre-ver*, *drecier* etc. was possible precisely because the monophthongization of [aj/ej] created new unreduced short vowels in prosodic weak position — which lead to a new, non-phonological reanalysis of the alternation [e, ɛ, je, æ] ~ [ə].

In a few cases, however, the reflexes of EOF [aj/ej] and [es/as] are reduced to [ə] in pretonic position, as already noted for *seneschal*. Table 4 gives further examples showing that this evolution is quite irregular: pretonic [ə] for EOF [es/ɛs] is not found in the paradigm of *aprester*, frequent in that of *prester*, and systematic in that of *prestir* and *arrester*; similarly, the reduction of [ej/aj] is relatively rare in the paradigm of *espleitier*, but regular in that of *coveitier*. This reduction must have taken place after the monophthongization of [aj/ej] and after the loss of preconsonantal [s] (probably also after the shortening of the resulting long vowel in non-tonic position). It is usually assumed that these two changes did not occur before

Table 4. Reduction of former vowels and diphthongs in the Basel glossary

	weak position		non-tonic strong position	
	percentage	occur.	percentage	occur.
<i>aprester</i>	0%	16	0%	5
<i>prester</i>	66%-50%	6	(0%)	1
<i>prestir</i> (< <i>pestrir</i>)	100%	4	n/a	
<i>arrester</i>	100%	6		
<i>empeechief</i>	(100%)	1		
<i>espleitier</i>	28%	7	(0%)	2
<i>gaitier</i>	57%-28%	7	(0%)	2
<i>afaitier</i>	71%-41%	21	0%	5
<i>alaitier</i>	100%-50%	6	0%	4
<i>coveitier</i>	100%-88%	9	0%-17%	6

the 12th century. One can thus hypothesize that schwa reduction was still active when these two changes began, i.e., during the 12th century, but stopped soon afterward, before they were completed.

In the Paris glossary, at least as it appears in the index, the reflexes of [es/es/aɪs] and [aɪ/eɪ] are not reduced. The only apparent exception is <sæteɪrs> *setiers* (also written with *a* <ə> in the Basel Gl.). The [ə] in this word, however, need not result from the reduction of a long vowel in non-tonic position. In Dees's data bank of 13th century charters (described in Dees 1980), this word is frequently spelled *setier* without *s*; elsewhere, the historical *s* is almost always noted in the spelling, e.g., in *mestier*. It is possible, thus, that the absence of *s* in this word has another source. The absence of reduction for [es/es/aɪs] and [aɪ/eɪ] in the Paris glossary has several interpretations: (i) the Paris glossary is more archaic than the Basel glossary or (ii) the monophthongization of [aɪ/eɪ] and the shortening of non-tonic reflexes of [es/es/aɪs] occurred only when the reduction of mid front vowels to [ə] in weak prosodic positions was no longer active.

3.3 The EOF phonological rule of schwa reduction thus disappeared before the 13th century. Was the alternative phonological analysis of schwa conversion proposed by Dell (for Modern French) valid for 13th century French, as suggested, e.g., by Linell (1979: 157)?¹¹ Dell's analysis was possible because a large number of the EOF vowels [e, ie, æ] which alternated

with [ə] became [ɛ] in Modern French. This was not the case in the 13th century Champagne and Eastern dialects. It is true that in these dialects, [a] often became [ɛ], as a consequence of which the alternation [a] ~ [ə] in *achate* ~ *ach[ə]ter* joined the alternation [ɛ] ~ [ə]. However, the passage of EOF [e] to [ɛ] (cf. Van den Bussche 1984) did not occur in these dialects. The reflexes of [ɛ] and [e] are still different (cf., e.g., Baudouin 1877 and Aub-Büscher 1962). The alternations (10) — well exemplified in the two manuscripts, thus, involved two distinct tonic vowels (cf. Suchier 1908: 34 for the [ɛ] in *profete*).

- (10) [e] ~ [ə] *drece*, *trece*, *seche*, *enseignier*, *conseillier*,
metre, *net* ~ *netoier*, *abevrer*, *essever*.
 [ɛ] ~ [ə] *profete*, ~ *profecier*, *estenceler*, *amoncel*,
renoveler, *reveler*, *remaindre* (*remènent* ~ *remen-*
ant), *prendre* (*prènent* ~ *prenant*).

The phonetic distinction between the reflexes of [e] and [ɛ] does not necessarily exclude Dell's analysis, if, as the examples (10) may suggest, the choice between the two vowels is predictable from the following context: [e] before the palatal consonants [ts, tʃ, λ, ɲ] and [ɛ] before the non-palatalized sonorants [l, n]. Indeed the opposition between EOF [e] and [ɛ] was neutralized before [l] in favor of [e] in the Champagne dialects during, or before, the 12th century, as appears from Chrétien de Troyes' rimes (cf. Breuer 1933 under *cel*, *ele*, and Doutrelepoint 1988). This opposition, however, was preserved before [t] in Chrétien's work, and can still be found in modern eastern dialects, cf. [set] *sept* vs. [pa] *pet* and [mat] *mettre* in Ranrupt (Aub-Büscher 1962). An adjustment rule, in which the underlying form would be /ə/ for both vowels, could not account for the distinction between *n[e]t* ~ *n[ə]toier* and *prof[ɛ]te* ~ *prof[ə]cier*. Similarly, the EOF vowel [æ] became [e] in Middle French and only later [ɛ] in closed syllables in Central French (cf. Morin 1983), but was still distinguished from [ɛ] in 13th century Central French and most likely also in the Champagne and Eastern dialects — preventing /ə/ from being the common underlying form of the stressed vowel of *host[æ]l* (whatever the reflex of [æ] might have been) ~ *host[ə]lier* and *nov[ɛ]l* ~ *renouv[ə]ler*.

The replacement of the alternations [ie] ~ [ə] [eɪ/oɪ] ~ [ə] by the alternation [ɛ] ~ [ə] in the paradigm of many verbs probably began during the 13th century. The 3sg pres ind of *celer* appears both as *çoile* (4 occ.) and *cele* (6 occ.) in Guiot's copy of Chrétien (cf. Ollier 1986), the latter result-

Table 5. The tonic vowels in the Basel glossary: analogical changes.

	<je, ie, iie>	<e, ē>
<i>despecier</i>	1	0
<i>alegier</i>	0	1
<i>venir</i>	1	0
<i>ferir</i>	2 (Cop.: 1)	0 (Cop.: 1)
<i>chever</i>	0 (Cop.: 1)	1 (Cop.: 0)
<i>lever</i>	1 (Cop.: 2)	2 (Cop.: 1)
	<oi>	<e, ē>
<i>esperer</i>	0	2

ing from an earlier analogical change according to Breuer: "anal. st. *des* unkristian." (1933: 52). It is difficult to determine to which extent this replacement had taken place in the two Hebrew manuscripts which contain very few present indicative or imperative forms, mostly due to the fact that, in the verbatim translation of the glossaries, the Hebrew continuous present is normally rendered with a present participle. Table 5 contains a list of the verbs in which the alternations [je] ~ [ə] and [oi] ~ [ə] are expected in the Basel glossary and the actual vowels observed in tonic position.

The monophthongization of [je] after [tf, dʒ], as in *chever* or *cher* or before [r] (cf. Banitt 1972: 67) is probably a regular sound change (in the last context, it is also possible that diphthongization has always been variable in the East). Elsewhere, however, the passage of [je] and [oi] to [e/ɛ] must be analogical: compare the 2sg imp <alejə> (B. 7363) with the 21 occurrences of the noun *siege* in the Basel glossary, all with [je], or the 2sg imp <eperə>, <ēpērə> (B. 2742, 11358) with the deverbal <epojr> (B. 2486). It is unlikely that the new tonic vowels [e] or [ɛ] should have been modeled after the vowels of future-conditional forms which are apparently less frequent.¹² Linell was probably right to say that they were modeled after the pretonic schwas of infinitives and similarly stressed forms. As schwa could not be tonic, it had to become a phonetically related vowel [e] or [ɛ]. There is no evidence, however, that this historical change was the manifestation of a putative synchronic rule of schwa conversion in which an underlying /ə/ is realized [e], [ɛ] or [æ] in tonic position.

4. Conclusion

The evidence provided by the two biblical glossaries indicates that Old French once had a simple prosodic pattern in which consecutive open syllables containing non-high front vowels were alternatively strong and weak: strong when they were tonic or before a weak syllable, and weak before a strong syllable. This pattern results from a prosodic organisation in which (a) a word is divided into smaller prosodic units — called feet — which can contain at most two syllables, (b) a word-final syllable containing [ə] is extrametrical, i.e., ignored in the construction of feet, (c) binary feet are right dominant (or iambic), i.e., stressed on the second syllable, (d) the weak syllable of a binary foot can only be open and contain a non-high front vowel or [ə], and (e) maximal feet are constructed from right to left. I have assumed that this pattern existed during the EOF period; but all that can be assumed with relative confidence, however, is that it existed before the 13th century.

Non-high front vowels in weak prosodic position were reduced to [ə]. This process was still active relatively late. It affected all learned words such as *prof[a]cie*, *prof[a]cier*, or *s[a]nagogue*. Although most of the former diphthongs [aj/ej] and the long vowels created by compensatory lengthening were immune, some of them were reduced to [ə] — at least in the language of the Basel glossary. This change implies that reduction to [ə] was still active after the monophthongization of [aj/ej] and the loss of preconsonantal [s], i.e., probably during or after the 12th century.

The modern pronunciation of *ensevelir*, *Geneviève* and *Gennevilliers* with [ə] in the first syllable is left unaccounted for. I have not found any early evidence for these words, however, and it is difficult to establish when and under which circumstances this pronunciation developed. A later, possibly non-phonological, development is not excluded.

This phonological analysis of EOF is a reconstruction. It presupposes that the distribution of [ə] and non-high front vowels observed in the two glossaries resulted from regular sound changes, and that later analogical changes modified the original distribution. This hypothesis is quite reasonable, as the monophthongization of [aj/ej] disturbed the original distribution of vowels and created the proper conditions for a reanalysis of the sound patterns. This monophthongization created new instances of unreduced front vowels in positions which should have been prosodically weak. The language could then have taken three courses: (i) reduce the newly created

vowels, (ii) give up its former prosody, or (iii) give up the reduction rule. I have no evidence for the third option, which implies that the language kept its binary feet, but lost the rule which reduced the vowel in a weak syllable to [ə]. We have seen that the first option was sometimes realized, thus leading to the reduction of the reflexes of the diphthong [aj/ ej] and of long mid-front vowels. It was short lived however, and soon the second option prevailed. The latter also implies a disappearance of the reduction rule: phonetic schwas must now be phonological. Insofar as the first vowel of *laidir*, for instance, is underlyingly /e/, the first vowel of *celer* [tsəlær] can no longer be analyzed as /e/, even if it alternates with [ɛ], as in (il) *cèle* [tsələ]. It must be underlyingly /ə/. This does not mean, however, that the tonic vowel of (il) *cèle* is phonologically derived from the same underlying vowel. On the contrary, it appears that there developed two distinct allomorphs with different underlying vowels, in this example, /tsəl-/ and /tsələ-/, which could both be extended to new forms, e.g., /tsəlær/ or /tsələra/. This is already the analysis of Modern French (cf. Morin, 1988).

Notes

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- 1. References to the Basel glossary will be indicated by B. followed by the number of the entry; references to the Paris glossary, by P. followed by the page and line in the text.
- 2. The rare exceptions appearing in Banitt's transliterations are probably typographical mistakes, as the corresponding Hebrew forms have a *šere* and not a schwa.
- 3. There are very few exceptions. In particular, three of the four occurrences of the diminutive *vilete* are written <viləta> (B.1655, 5261, 5364, 6135) either by the copyist (B.5364, 61352) or the punctuator (B.1655).
- 4. I use [æ] and [je] to represent the reflexes of Latin stressed *a* and *ē* in open syllables as *patre* > p[æ]re and *pētra* > p[je]re rather arbitrarily, as it is difficult to know precisely the quality of these vowels in EOF.
- 5. Earlier synopes have also created other phonologically opaque alternations e.g. [i] ~ Ø as in *morir*: (il) *mor-Ø-ra*, [e] ~ Ø as in *ploveir*: (il) *plov-Ø-ra*, [o] ~ Ø as in (il) *parole*:

par-Ø-ler, etc. The syncopated variants are best analyzed as suppletive forms, as proposed by Walker (1981: 88) for the athematic/thematic markers of infinitives and future-conditional forms. Under this analysis, one should not phonologically relate future-conditional forms to the corresponding infinitive from which they are historically derived (contra Walker 1981: 46). As a consequence, the future-conditional thematic vowel [ə] need not be analyzed as a reduced form of the infinitive thematic vowels [æ]/[je], e.g., in *chant[æ]r*: (il) *chant[ə]ra* and *lac[je]r*: (il) *lac[ə]ra*, even though the alternation [je] ~ [ə], for instance, is otherwise phonologically transparent.

- 6. The vowel [æ] also alternates with [a] as in *s[æ]l*: *s[a]ller*. The [æ] ~ [a] alternation, however, is completely opaque, cf. *v[a]l*: *(a)v[a]ller*. The alternation [æ] ~ [ə] in EOF, on the other hand, appears to be governed by the same prosodic patterns as the alternations [e] ~ [ə], [je] ~ [ə] and [e] ~ [ə], although it is relatively limited and in particular not found in the first syllable of stems. This situation, however, reflects earlier prosodic patterns of the language, and not necessarily current phonological constraints.
- 7. These authors assume that the underlying representations of some [ej]'s and [je]'s are respectively /e/ and /e/ (they would probably analyze [ej] in pretonic position as the realization of an underlying diphthong /ej/, e.g. in *v[e]i[sin]*). In their analyses, the alternation [je] ~ [ə] found, e.g. in (il) *desp[je]ce* ~ *desp[ə]cier*, actually results from two phonological rules: diphthongization of underlying /e/ in tonic position and reduction of /e/ to [ə] in weak prosodic position. Elsewhere, i.e., in non-tonic strong prosodic position, the same underlying /e/ would probably be realized as [e], e.g., in (il) *desp[je]cera* (cf. Walker 1981: 39).
I will assume here that the double alternation [e] ~ [e] ~ [ə] is phonologically predictable from an underlying /ej/ which is realized [e] in non-tonic strong prosodic position and [ə] in weak prosodic position.
- 8. Square brackets [...]_f with a subscript *f* are used to mark feet boundaries.
- 9. I will leave aside the problem of learned proparoxytones such as *jovene* or *aneme* in EOF which are often interpreted as conservative spellings for paroxytones: [dʒóvne] or [ánmē]. Fouché (1960: 509, 520) also analyzes forms with an enclitic -je such as *chante-je* as phonological proparoxytones [tʃántədʒe], which would only have become paroxytones during the 15th century: [tʃā(n)tédʒə], with a simultaneous change of [ə] to [e] under stress. The Basel glossary contains only one relevant occurrence of enclitic -je: <parleja> *parlé-je*. This hapax legomenon suggests that oxytonic stress before enclitic -je could be much earlier than suggested by Fouché.
- 10. Only two forms, *reveler* and *revelant*, appear with an initial <rē-> in Banitt's edition. The editor notes, however, that the copyist intended a <re-> in five other forms, which the punctuator chose to write as <rā->. Some variability is also noted for *revelement* "rebellion". The seven occurrences are regularly written <rəveləmant>, *rəveləmant*, *rəveləmant* > by the punctuator, but two of the copyist's forms are more difficult to explain: <rəveləmant> (he may have begun this form as an infinitive) and <rəveləmant>. This kind of error is otherwise extremely rare in the manuscript.
- 11. Linell (1979: 157) proposes that "in modern French some verbs have generalized the vowel of the Old French infinitive, e.g. *lever*, *je lève* (è /e/ being the stressed counterpart of /ə/), cf. Old French: *lever*, 1sg pres *liève* [sic]". As will be shown later, these innova-

tions probably began during, or before, the 13th century (they are also found in Guiot's copy of Chrétien de Troyes) and thus Linell's interpretation of the change presupposes that Dell's analysis was already valid during that period.

12. On the other hand, future-conditional forms have often been rebuilt after pres sg forms, e.g., *vendra* > *viendra* in Central French. Similar analogical changes are observed in the Basel glossary. The copyist wrote 6 and the punctuator 2 of the 15 forms of *lever* with the diphthong [je], e.g., 1sg fut <alijevare> (B.12015). Similarly, *essevement(s)* appears once as <esojevamanç>, probably after the (unattested) pres sg forms of *esrever*.

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