

The uneven trochee in French

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This article presents an analysis of the metrical and prosodic structures of Standard (SF) and Midi French (MF) within the framework of Optimality Theory. It is argued that both linguistic varieties continue to reflect aspects of the Latin trochee in that a left-headed foot is systematically required as a prosodic constituent. The phonetic differences manifested between these varieties of French in the phenomena analyzed – stress placement, schwa syncope, and mid vowel adjustment – are the result of how each variety prioritizes a set of prosodic constraints. I maintain that the foot in SF and MF is not a balanced trochee, rather it consists either of a single well-formed syllable [σ] or of a syllable followed by a reduced vowel [σ x], the latter being termed the “uneven” trochee. Under this view, the metrical system of French is neither strictly syllable-based nor strictly foot-based. This article demonstrates that both varieties of French disfavor the uneven trochee and attempt to eliminate it through schwa syncope. Its total elimination is, however, blocked by constraints at the syllabic level.

1. Introduction

In standard descriptions of the phonology of the French language, Midi French (accent méridional) is characterized as differing from Standard (Parisian) French by its retention of e-muet which can cause stress to fall either on the ultimate or the penultimate syllable (when followed by e-muet) (e.g. *demain* [dɑ.ˈmɛ̃] tomorrow' -vs- *bête* [ˈbɛ.tɛ] 'beast'). In Standard French, final schwa is unpronounced, thus all words are oxytons (e.g. [ˈbɛt], [dɑ.ˈmɛ̃]). A further salient difference is manifested in the south by a rigid adherence to a contextualized opening of all mid vowels in closed syllables (e.g. *laisser* [le.sɛ] 'leave', inf. -vs- *laisse* [lɛs(ə)] (3p. sg) from /lɛs-/). In northern varieties, on the other hand, the distribution of mid vowel variants is less regular since both the open and closed mid vowels have become phonemicized in certain lexical entries (e.g. *côte* [kɔt] 'quota' -vs- *côte* [kot] 'coast'). While a great deal of regional and idiolectal diversity is found in both varieties of French, these statements are valid as descriptive generalizations. This article takes a different approach to these observed differences and aims to explain such variation in terms of the *similarities* of prosodic structure found in Midi French (MF) and Standard French (SF). Specifically, I propose that facts of stress placement, schwa syncope, and mid vowel

designated prosodic domain, such as the foot or the prosodic word. Thus, applying the End Rule (End Rule/right) directly to a word tree will yield the desired stress result for SF without appealing to the foot. Notice, however, that structures such as (1) would fail to capture the cases of penultimate stress placement in MF, an issue to which we will return later.

The purported irrelevancy of the foot for the determination of stress placement in French conforms to the descriptive and pedagogical phonologies of the language in which French is characterized as rigidly syllabic or syllable-timed (Casagrande 1984, Tranel 1987).¹ We may ask, as many have done, if the foot is a relevant constituent at all in French (Basbøll 1981, Morin 1983). Selkirk, in an often cited article (1978) was the first to formulate a role for the foot in French. She argued that alongside a single syllable foot, a derived foot may be formed in French by the cliticization of a syllable containing schwa to the previous syllable. The schwa in the derived foot is subsequently the target of deletion, accounting for its erasure finally and word internally as well as across syntactic boundaries. As a further effect of the foot, Selkirk was able to formulate a general rule of closed syllable adjustment even when schwa deletion did not apply in the derived foot, as in *célébrez* 'to celebrate; future' = [se]_F[l. brə]_F[re]_F, where the underlined vowel in antepenultimate position is open despite its occurrence in an open syllable. Within this view, it is sufficient that the mid vowel be "followed by something else inside the foot" (Selkirk 1978:149).

There was widespread rejection of Selkirk's analysis primarily because it failed to account for the instability of word initial schwa in such forms as *pelouse* 'lawn' and also because the analysis neglected the influence of morphology on the phonology of schwa (cf. Morin 1983, Tranel 1984, 1985, Verluyten 1985). While such criticism is, indeed, warranted, I believe that the essential claim of Selkirk's article – that such a constituent as the left-headed foot accounts for much of the phenomena associated with schwa – is correct. That the binary foot cannot account for every instance of schwa syncope or that the morphology must be credited with a role in schwa phenomena does not entail that the notion of the foot in French is ill-conceived.² In defense of Selkirk's analysis, this article argues that the derived foot, which corresponds to my "uneven trochee", does serve as a prosodic constituent in both MF and SF, and that the uneven trochee can be seen as the lone remnant of the fully binary trochaic system of Latin. Its persistence to this day places French in the unique position of a trochaic language which is neither moraic (like Latin) nor syllabic. The following section reviews Mester's (1994) analysis of the Latin foot which serves as the point of departure for my analysis of synchronic prosodic structure.

2.1. The Latin Trochee

Mester (1994) presents a detailed analysis of the role of the moraic trochee in Latin. This foot is defined by strict binarity; that is, it has a maximal and minimal expansion of two morae: Quantitative Trochee_{min:2}^{max:2>} (Mester 1994:6). Among the various effects of the moraic trochee within the phonological and morphological components of Latin is the prediction that light syllables can become "trapped" by the prosodic system when they cannot be incorporated into feet. An effect of prosodic trapping is illustrated by syncope phenomena in Early Latin and later in Vulgar Latin (cf. Mester 1994:7, 38-43):

- (2) Early Syncope (Mester 1994:40)
- | | | | | |
|------------------------|---|-------|-----------|-----|
| jūrigō | → | jurgō | 'quarrel' | |
| QT _{-2,2>} | | jū | ri | gō |
| | | [σ] | σ | <σ> |
| | | | ↓ | ∅ |

In the graphic above, the final (heavy) syllable is extrametrical. The initial syllable is heavy and satisfies the bimoraic maximum by itself. The medial (light) syllable is then trapped in this configuration; it cannot be incorporated into the preceding stressed foot without violating the upper-bound of two morae in the trochaic foot. As a resolution to this configuration, the medial vowel is deleted and the desired binary foot structure is restored, with the sonorant [r] now bearing the second mora of the initial syllable and the initial vowel subsequently shortened.

When vowel length distinctions were lost in Vulgar Latin, syncope began to effect all post-tonic penultimate vowels whether they followed an originally heavy syllable or not. Mester argues that Late Latin Syncope occurred when the contrast between the moraic trochee and the syllabic trochee was neutralized in favor of the latter, that is before [σ]. Thus, in Vulgar Latin, syncope targets the weak position in the foot, erasing unstressed vowels after the tonic syllable (e.g., *sōlīdu* → *sōlīdu* → *sou* (Fr)) (cf. Jacobs 1990). From these facts, Mester (1994:42) claims: "the only true remnant of the classical system of syllable weights is the fact that closed penults continue to count as heavy and attract stress. All other syllables count as light". And, as a result, all feet become quantity insensitive with the exception of the penultimate which continues to manifest heavy (closed) syllables.

As a reconstruction of Vulgar Latin syncope, Mester's analysis is convincing. Problems arise, however, when trying to extend such an analysis into Gallo-Romance. First, describing the deletion of post-tonic

vowels as a process which targets the weak position of a foot begs the question of why such a deletion should occur since, after all, the foot [σσ] is a perfectly well-formed syllabic trochee. In other words, simply the change from a moraic compositionality [σ]σ<σ>] to a syllabic one [[σσ]<σ>] resolves the trapping problem. Secondly, Mester restricts quantity-sensitivity positionally. Suppose that Late Latin syncope is a strategy to create heavy syllables in penultimate position, how do we account for *pretonic* syncope in Vulgar Latin and in early French (Bourciez 1974)? All unstressed vowels (with the exception of Latin /a/) that immediately precede the tonic syllable delete in French (e.g. *bōn(i)tāte* → *bonté* 'goodness', *lībērāre* → *livrer* 'to deliver'), creating closed syllables in unstressed position. Like post-tonic deletion, this applied across the board, syncopeating atonic vowels after heavy and light syllables alike.

I suggest that the solution to these questions rests in the evolution of a foot based on quantity to one based on quality. By the time the distinction between moraic trochees and syllabic trochees were neutralized, qualitative contrasts had replaced quantitative ones. However, the vowels in the weak position of the syllabic trochee were most likely reduced which disrupted the developing system of trochees based on quality. Evidence for the reduction of final vowels and for their non-distinctivity comes from the *Serments de Strasbourg* (842) where there is an orthographic fluctuation between *a*, *e*, and *o* within the same text, indicating a hesitancy on the part of the copyists over vowel quality (cf. Walter 1988:66):

- (3) Serments de Strasbourg
 a. *fradra/fradre* → *frère* 'brother'
 b. *Karle/Karlo* → *Charles*

All other non-initial atonic Latin vowels which either preceded or followed the stressed syllable followed the same path of destabilization and eventual deletion (Bourciez 1974:38-42).

This evidence of vowel reduction provides a clue about why syncope may have continued to target the right branch of a syllabic trochee in Gallo-Romance. I propose that what we see in Gallo-Romance and in French is not a well-formed syllabic trochee [σσ] at all; rather, it is the uneven trochee [σ x] based on the contrast between fully specified and unspecified vowel quality. In essence, the developmental of the foot in French skipped over the stage of the even, binarily bound syllabic trochee. In the rest of this article, I outline the theoretical motivation behind the uneven trochee and examine its current scope in the prosody of SF and MF.

2.2. The Uneven Trochee

Hayes (1985) argues that vowel reduction is an atypical process in trochaic languages. Whereas iambic systems are distinguished by their tendency to enhance durational contrasts, trochaic systems (particularly those that exhibit an alternating rhythmic pattern) tend not to reduce stressless vowels since reduction would erode the even timing pattern. This is known as the iambic-trochaic law and it is based on the human perceptual strategies used to parse continuous beats. Thus, it is much more a behavioral tendency than it is a linguistic law, although Hayes (1985, 1995) demonstrates the linguistic utility of such a notion. Both Jacobs (1990) and Kager (1993) refer to late Latin as a counter-example to Hayes' iambic-trochaic law: it is a trochaic language with reduced vowels in atonic position.

There are two considerations which allow us to retain the restrictiveness of Hayes' iambic-trochaic law. First, vowel reduction is not a purely quantitative process; that is, there is an erosion in the quality of the vowel as well. Reduced vowels tend to become centralized ([ə][ɪ][œ]) and often indistinct or unspecified in timbre. In a system like French, it is likely that rather than opposing heavy and light syllables, the phonological system has become organized in such a way that qualitative contrasts have replaced purely quantitative ones. Thus, syllables containing fully specified, distinctive vowels contrast with syllables containing unspecified vowels, as in (4) where an empty matrix represents an underspecified element.

- (4) Qualitative Opposition
- | | | |
|--------------|------|-----|
| σ | x | |
| | | |
| V | -vs- | V |
| | | |
| [α Features] | | [] |

I propose that the contrast in (4) is the basis for the uneven foot. That is, the opposition here is between a syllable [σ] of distinct quality and one in which vowel timbre is neutralized [x], forming the qualitatively based trochee [σ x]. This leads us to a second consideration: the uneven foot does not constitute a well-formed syllabic trochee [σ σ]; it is not a balanced foot. In order to restore an even timing pattern, the uneven foot is repaired by syncope; that is, the "defective" syllable nucleus is deleted: [σ x] → [σ]. This type of foot optimization actually supports Hayes' claim in that vowel reduction is eliminated from the trochaic system.

The optimization of the foot by eliminating the uneven trochee creates a surface output in which the syllable and the foot are largely co-extensive units. However, as the following analysis of MF and SF demonstrate, there is not a complete overlap since the elimination of the uneven trochee and conditions on the well-formedness of syllables interact. In the following sections, I delineate the metrical and prosodic role of the uneven trochee in MF and in SF.

3. The Metrical Role of the Foot in French

To begin an analysis of the foot in SF and MF, it is necessary to consider its role as a metrical unit. As stated earlier, stress in SF falls regularly on the final vowel of a word since the final orthographic schwa is generally mute. In MF, the situation is much the same except that it is a characteristic of the south that final schwas is audible and post-tonic.

Secondary stress tells us very little about the metrical system of either variety of French since there is little agreement that secondary stress is perceived. Some propose that there is no secondary stress (Rigault 1970), others state that stress falls on alternating syllables from the final (Verluyten 1985), and still others claim that it regularly strikes the initial syllable of a word (Fonagy 1979). Given the lack of consensus about secondary stress and the fact that primary stress is relatively fixed, it seems reasonable that we only need to assume a single foot per word in order to account for stress placement in the language.³

This may be done by formulating the end rule as an alignment constraint (Prince and Smolensky 1993, McCarthy and Prince 1993) where the edge of some morphological category must align to, or meet the edge of, some phonological category. We may posit a single alignment constraint for both SF and MF:

- (4) Align-Right
Align (Morphological Word, Right, Foot, Right) or
F] = \downarrow_{MWA}

The alignment constraint depicted in (4) simply assures that the right edge of the foot is co-extensive with the right edge of the morphological word.

At this point, however, we must, tentatively, formulate two different foot types to account for the difference in SF and in MF. This can be done by stating that the foot in SF is satisfied by a single syllable (since final schwas play no role in the metrical system); in MF the foot consists of a syllable followed by an optional reduced syllable (symbolized

below by a breve marked sigma).

- (5) Foot Types
a. SF: F = [σ] e.g., belle [bɛl]_F 'pretty' fem.
b. MF: F = [σ (σ)] e.g., belle [bɛ.lɔ]_F

If we had no other facts than stress to consider about these languages, the constraint in (4) and the typology in (5) would exhaust the usefulness of the foot. However, metrical evidence is insufficient to inform us about the broader implications of the foot in a language's prosodic system. Crucially, we know that the foot functions as a domain for prosodic processes (Nespor and Vogel 1986, interalia) and that languages use foot structure in determining morphological, as well as phonological, well-formedness (McCarthy and Prince 1986, 1993). Thus, in the next section, I consider the role of the foot in the prosodic systems of SF and MF. Considerations of the prosodic role of the foot will lead to a revision, and a simplification, of the typology in (5). That is, we will see that the maximal expansion of the foot in both varieties is the uneven trochee.

4. The Prosodic Role of the Foot

If the foot constitutes a prosodic constituent in French then we expect it to be responsible for some degree of the well-formedness of the output. As crucial evidence, we need to find constraints operating in a domain larger than the syllable and smaller than the word that cannot be otherwise accounted for by syllabic well-formedness conditions. Such evidence is forthcoming both in MF and in SF. Since these constraints regulate different behaviors in each of these linguistic varieties, I consider them in turn.

4.1. Vowel Adjustment in MF

In most Midi varieties of French, the *loi de position* is an absolute process effecting the mid vowel series (Rochet 1982, Durand 1990, interalia). As it is traditionally defined, the *loi de position* states that in closed syllables, the [-low] (or open) variant of the mid vowels is found and the [+low] (or closed) variant is found in open syllables: [e] → [ɛ], [ø] → [œ], [o] → [ɔ] (e.g. *peau* 'skin' [po] -vs- *pomme* 'apple' / *paume* 'palm' [pɔm] in MF). In SF, adjustment is not absolute and minimal pairs may be established (in a limited way since there are few such examples) based on the contrast between mid vowels (6).

- (6) Minimal Pairs in SF
- | | | | | |
|--------------|---------------|------------|---------------|----------|
| a. [e] ~ [ɛ] | baller [bale] | 'to dance' | ballet [balɛ] | 'ballet' |
| b. [ø] ~ [œ] | jeûne [ʒœn] | 'a fast' | jeune [ʒœn] | 'young' |
| c. [o] ~ [ɔ] | côte [kot] | 'coast' | cote [kɔt] | 'quota' |

In MF, each pair represented in (6) is homophonous. There is no need to posit both phonetic variants of the mid vowels in underlying representation since they are clearly allophonic. Thus, with respect to SF, the phonemic vowel inventory of MF is more restrictive.

The only exception to closed syllable adjustment in MF occurs in the penult when followed by schwa. In these cases, although the mid vowel is found in an open syllable, it is phonetically manifested as [+low] as illustrated in the examples in (7).

- (7) Penultimate adjustment in MF
- | | | | |
|----------|----------|------------|------------------------|
| a. | bête | [bɛ.tə] | 'beast, stupid (fam.)' |
| compare: | bêtise | [bɛ.ti.zə] | 'absurdity' |
| b. | aveugle | [avø.glə] | 'blind' |
| compare: | aveugler | [lavø.glə] | 'to blind' |
| c. | rose | [rɔ.zə] | 'rose' |
| compare: | rosier | [ro.zje] | 'rosebush' |

Notice that in this position, the mid vowels lower in open syllables as if they were found within a closed syllable.

We can account for such adjustment as seen in (6) and (7) by expanding the domain for the *loi de position* as proposed by Durand (1990:223). As the evidence in (7) demonstrates, the context in which mid vowels are lowered must be construed as something larger than the syllable. Thus, the feature [+low] is inserted when the mid vowel is followed by another segment (where this segment is denoted by the variable χ) within the same foot (8).

- (8) Context for Mid Vowel Adjustment in MF
 --- χ _F

The foot which provokes the exceptional adjustment in (7) can now be linked to the uneven trochee that is responsible for penultimate stress placement in MF. In both cases, it is the presence of the unspecified schwa which requires that a domain larger than the syllable be considered to account for prosodic as well as metrical phenomena in MF. The required domain, in both the metrical and prosodic components of MF, is the uneven trochee.

A question remains: why does MF tolerate the uneven trochee and retain schwa? Since the uneven trochee is not a balanced foot, it is reasonable to assume that the language would seek to optimize foot structure by eliminating such ill-formedness. While schwa deletion is not a characteristic process of MF, it can nevertheless occur, particularly away from the final stressed foot. This indicates that restoring even timing is an option in MF (e.g. *mousqueterie* [muskɛtəri] or [muskɛtri] 'musketry').⁴

I propose to account for the possible retention of schwa in MF by prioritizing prosodic constraints internal to MF in an Optimality format (Prince and Smolensky 1993, McCarthy and Prince 1993). That is, I propose that there is a constraint in French (both MF and SF) which prohibits phonological constituents that are larger than syllable size: * $[\sigma$ x]. A process of foot optimization (9) then attempts to eliminate the uneven trochee wherever possible.

- (9) Foot Optimization
 $[\sigma$ x] \rightarrow $[\sigma]$

This rule is context-free; its operation is constrained by its interaction with well-formedness constraints at other levels of prosodic and segmental structure. One such constraint, the negative coda constraint, abbreviated as -COD by Prince and Smolensky (1993), is one which disfavors syllable codas (10). -CODA is assumed to be universal since all languages syllabify a sequence VCV as V.CV rather than *VC.V. In keeping with the tenets of harmonic theories, this constraint, like every constraint, is violable.

- (10) -COD (Prince and Smolensky 1993:34)
 Syllables do not have codas.

Assuming that both (9) and (10) are active in French, we can now account for the non-deletion of schwa and for the tolerance of the uneven trochee in MF. In this variety, the -COD constraint has priority over Foot Optimization. This relationship can be expressed by the dominance hierarchy in (11).

- (11) MF
 -COD >> Ft Optimization

The ban on codas, a syllabic constraint, takes precedence over the resolution of the uneven trochee, a foot-based constraint, in MF. However, notice that the *loi de position* (LP) in (8) also plays a role in this interaction since it favors the selection of, for instance, (*k.ɔ.t.ə*) over

- ii. Pronounced schwa
- | | | | |
|----|------------|-------------|---------------|
| a. | forgeron | [for3əɾɔ̃] | 'blacksmith' |
| b. | percevoir | [pɛrsəvwar] | 'to perceive' |
| c. | vendredi | [vɑ̃drɛdi] | 'Friday' |
| d. | forteresse | [fortɛʁɛs] | 'fortress' |
- iii. Contiguous schwas
- | | | | |
|----|--------------|------------|----------------|
| a. | chevelure | [ʃɛvlyr] | 'head of hair' |
| b. | ensevelir | [ɑ̃sɛvliʁ] | 'to shroud' |
| c. | mousqueterie | [muskɛtri] | 'musketry' |

Selkirk proposes that schwa deletion is controlled by the foot. It is not simply a process which targets schwa randomly because, if it were, schwa would be deletable in a form like **forteresse* where the resulting consonant cluster is fully syllabifiable. Her formulation of schwa syncope was criticized in part because schwa may be optionally deleted in initial position where it creates clusters that regularly violate phonotactics (e.g. *fenêtre* 'window', *cheval* 'horse') and where schwa cannot be said to form a foot with a syllable to its left. The second objection to her analysis is that morphological information plays a role in schwa deletion, precluding such simple linear formulations of the rule (e.g., *gard+er+a* [gardra] 'to guard' (3 sg. fut.) -vs- *garderie* [gardəri] 'day-care center').

It would take us too far afield to present a complete analysis of the phonology/morphology interface in SF so instead, let me briefly outline one approach to this problem (cf. Bullock, forthcoming). While I argue in this paper that the foot is a relevant domain in French, it is also necessary to recall that the construction of any domain in phonology can be constrained by other linguistic factors such as morphological categorization. Phonological domains and morphological domains are not co-extensive; rather, each have internal well-formedness conditions that may interact with one another.

In SF, resyllabification across boundaries is not an automatic consequence of morphological concatenation. For instance, it has been demonstrated that the domain of the phonological word includes the stem and suffix but excludes prefixes (Hannahs 1991). In essence, the morphological word is not aligned with the phonological word and prosodic restructuring is blocked across this abstract boundary. Similarly, it has been argued elsewhere (Montreuil 1993), that resyllabification across monosyllabic suffix boundaries applies only if the final syllable (i.e., foot) lacks an onset, otherwise the prosodization of the stem rests intact (e.g., *geler* [ʒɛ(ɛ)ɹ] 'to freeze', *geler* [(ʒɛɪ)ɹ] (3sg), *geler* [(ʒɛɪ)ɹ] (3 sg. fut), *congelateur* [(kɔ̃)(ʒɛɪ)+a(tœr)ɹ] 'freezer').

The final point to be addressed concerning the objections to a foot-based analysis of French is that foot construction is a restrained

operation and it is not necessarily exhaustive. That is, feet are constructed from right to left, based on the possibility that a head to the foot may be found. Full vowels automatically constitute heads; unspecified vowels are underlyingly ill-formed as heads and, in initial syllables, they are left unfooted: fə(nɛtr)_F.

I argue that the domain for foot formation in SF is the phonological word, beginning with the right edge of the morphological word and ending at the left edge of the stem. At the right edge, a stressed foot is delimited, and following the grammaticalized constraint in (14), it must equal a well-formed syllable. I maintain that in SF, uneven trochees surface only when they cannot be avoided. This means that uneven trochee is reduced to a single syllable wherever possible unless such reduction would result in syllable ill-formedness. A foot cannot be restructured in SF, nor in MF, if such restructuring would create violations of syllable structure conditions.

The Foot Optimization constraint (9) is blocked in SF only by a variation on the -COD constraint. In SF, the -COD constraint must be modified to take the form in (16) (Prince and Smolensky 1993:87):

(16) *COMPLEX/Coda

No more than one Consonant may associate to any syllable coda.

Foot Optimization dominates -COD in SF and allows closed syllables to be created as a result of refooting. It is, in turn, outranked by the constraint in (16). This prioritization of constraints increases the frequency of schwa syncope in SF with respect to MF by relaxing the conditions under which the foot may be optimized. In other words, closed syllables are not strictly prohibited in French but those closed by clusters are. Sample illustrations of the effect of this order are shown in (17).

(17)

- a. Foot Optimization >> -COD
- | | | | |
|---------|-----------|-------------|-------------------|
| input | prosodize | footing | foot optimization |
| échelon | e.ɛ.ɔ̃.ɔ̃ | (e.ɛ)ɔ̃(ɔ̃) | (e)ɔ̃(ɔ̃) |
| | | (σ x) (σ) → | (σ) (σ) |
- b. *COMPLEX/Coda >> Foot Optimization
- | | | | |
|----------|------------|---------------|--------------------------|
| input | prosodize | footing | foot optimization |
| forgeron | for.ʒə.rɔ̃ | (for.ʒə)(rɔ̃) | *(forʒ)(rɔ̃) |
| | | | (violates *COMPLEX/Coda) |

Complex codas are permitted in word-final position (e.g., *forge* [forʒ]). This is because the right edge of the phonological word must coincide with the right edge of the morphological word in SF.⁸ Thus, we

can say that the alignment of the prosodic category to the morphological category is an interface constraint that takes precedence over all the prosody-internal conditions on well-formedness (cf. Bullock, forthcoming, for details).

We are now in a position to generalize about the results of constraint interaction in SF and in MF. We have seen that both varieties of French retain the uneven trochee when its elimination would conflict with syllable well-formedness. In MF, the conditions on syllable structure are more stringent, disallowing the licensing of coda consonants as the result of prosodic restructuring. With respect to MF, SF permits codas relatively freely although it prohibits clustering in that position. In both varieties of French, the uneven trochee is the result of a violation of the Foot Optimization constraint which interacts with, and is superceded by, constraints on syllabic well-formedness. The metrical domain in both MF and SF may now be characterized simply as the final foot and through the interaction of the various constraints outlined in sections 4.1 and 4.2, this can be understood as the uneven trochee (in MF) or the single syllable foot (in SF). The shape of the final stressed foot (the metrical foot) is mirrored by the word internal prosodic foot in both varieties: because of its rigorous syllabic constraints, MF generally retains the uneven foot while the relaxed syllable requirements of SF allow Foot Optimization more liberally.

5. What is the Uneven Foot?

The uneven foot that I have proposed to account for metrical and prosodic phenomena in SF and MF has more in common with the quantitative trochee than it does with the syllabic trochee. Recall that the prosodically trapped syllables in Early Latin were syncopated because they could not be structured into a foot without exceeding moraic minima. Schwa syncope in modern SF looks very much like a case of prosodic trapping where the unspecified vowel is "caught" between well-formed syllables: $[\sigma] \times [\sigma]$. We must presume that the reduced vowel can never form a single syllabic trochee on its own otherwise we cannot account for its failure to bear stress,⁹ its consistent pattern of elimination in contiguous syllables, and the fact that it is overwhelmingly targeted for deletion rather than stabilized in quality. It surfaces as a reduced vowel only in those cases where its elimination would conflict with well-formedness requirements at the syllabic level.

The point to be emphasized, and one that puts this analysis at odds with Mester's reconstruction of Late Latin and Gallo-Romance, is that French does not seem to neutralize the moraic and syllabic trochee in

favor of the latter. There is no evidence that the balanced syllabic trochee plays any role at all in French; the only persistent syllabic trochee is formed in the presence of a neutralized or reduced vowel. The trochaic law disfavors elements that disrupt regularity and predicts that processes will apply to correct rhythmic ill-formedness. The evidence from French points to a system which makes every attempt to eliminate this ill-formedness by erasing binary, (uneven) feet altogether. The continued phonetic manifestation of the sole reduced vowel, schwa, in SF and MF is the only remnant of a formally binary, and crucially uneven, trochee.

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Notes

- 1 Psycholinguistic research has overwhelmingly dispelled with the putative distinction between syllable-timed and stress-timed languages (Crompton 1980, Wenk and Wioland 1982, Dauter 1983 and, especially, Fletcher 1991).
- 2 See Bullock (forthcoming) on the interface between prosody and morphology in French.
- 3 However, when prosodic considerations are taken into account (§4), it will be seen that a single foot per word is insufficient and this assumption will be revised.
- 4 The conditions under which Midi speakers delete a word-internal schwa is not well defined since there is a great deal of idiolectal variation (cf. Durand, Slater and Wise, 1987).
- 5 For details on the interpretation of a constraint tableau, the reader is referred to Prince and Smolensky (1993) wherein Optimality Theory and its formalisms are defined. In general, an asterisk marks a constraint violation and an exclamation point marks a "fatal violation" that removes a candidate from further consideration. Shaded cells indicate that the information contained within has no bearing on output.
- 6 Selkirk's analysis goes further than this, accounting for the adjustment of schwa in the strong branch of a foot and for the postlexical deletion of schwa. The phonology of schwa is a complex issue to which Verlyuten's (1988) volume is dedicated. In a data-rich article in that volume, Morin shows that schwa adjustment is extremely erratic and, most likely, conditioned morphologically. I leave aside this issue for the purposes of this paper, choosing to focus only on word internal schwa syncope, a systematic process.
- 7 I have intentionally omitted prefixal schwas in this data set since I believe prefixes to be outside of the domain of foot construction. In essence, a prefix cannot be structured into a foot with the following syllable. The deletion of prefixal schwa is optional and follows the tendency, especially in fast speech, to erase the reduced vowel wherever possible.
- 8 I am assuming here that the MW'd must align with the final underlying segment of the prosodic word. At issue is the question of the status of the PARSE constraint in French. This constraint would allow segments to be invisible at a domain edge. If we assume that word final latent or floating consonants (e.g. *peti(t)*) are underlyingly ill-formed in that they lack a timing

slot, we can restrict violations of PARSE to just those cases. All other lexical items must be fully prosodized. On the subject of floating consonants, see Hyman 1985, Encrevej 1988, Prunet 1992, and Paradis and El Fenne (1993).

⁹ Schwa is exceptionally stress bearing in postposed, domain final clitics: *Prends-le!* [prɔ̃dɛ] 'take it'. We can account for this by assuming that an enclitic forms a Phonological Phrase with the material to its left: [(prends)_{PWA}(le)_{CPH}]. Aligning the final foot with the PPH would require the clitic to be parsed both as a morphological element and as a prosodic element, the final foot: [(le)_φ]. Since schwa fails to form a head, it must be adjusted to a vowel of stable quality.

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