ON THE STATUS OF INFIXATION AND CIRCUMFIXATION IN ENGLISH MORPHOLOGY[1]

Piotr Ruszkiewicz

Cracow Academy of Education

ABSTRACT

The paper casts a new light within the framework of generative grammar on the relatively recently acknowledged modes of word formation in English – (expletive) infixation and circumfixation – in relation to the well established processes of suffixation and prefixation. The discussion focuses primarily on the structural aspects of word formation processes as defined by recent advances in generative linguistic theory, especially the requirement that structures are maximally binary-branching. Of necessity, semantic considerations have been given much less attention here. Previous attempts to define the conditions on expletive infixation in English are shown here not to have attained the level of descriptive adequacy in the sense of Chomsky (1964). Furthermore, it has been demonstrated how a description of infixation couched in terms of government phonology can account for the native speaker's intuitions concerning the landing sites for the expletive infixes. Finally, the principle of maximal binarity coupled with diachronic considerations has been used here to rule out circumfixation as a mode of English word formation.

1. Introduction

The traditionally acknowledged modes of word formation include suffixation, prefixation and infixation. Recently, circumfixation has been recognized as a means of constructing words. With the exception of infixation in modern English, which makes use of free morphemes (words), all these modes consist in combining a bound morpheme with a linguistic unit called *the base*. The operation results in the forma-

---

tion of a new, more complex linguistic unit. Depending on the position of the landing site with respect to the base, bound morphemes are divided into:

(1a)   suffixes, which end up immediately to the right of the base,
(1b)   prefixes, which occur immediately to the left of the base,
(1c)   infixes, which end up in the middle of the base, and
(1d)   circumfixes, which straddle the base.

The bound morphemes named in (1) are generally subsumed under the label *affixes*. When a derivational affix is attached to a linguistic unit, the latter is referred to as *a derivational base* or *base of derivation*. When the affix employed in a word-building process is inflectional, the unit the inflectional affix attaches to is referred to as *an inflectional stem*.

The classification of morphemes into free and bound takes into account the morphemes' ability to function as words. The morphemes which can function as words are *free*, all other morphemes are *bound*.

The bound morphemes should not be automatically assigned to the class of affix morphemes. For instance, in the Slavic languages inflectional stems are bound, but they do not have the status of affix morphemes. These data strongly suggest that bound morphemes fall into two categories:

(2a)   affix morphemes, and
(2b)   non-affix morphemes.

The process of combining affixes with free morphemes or with bound non-affix morphemes is governed by subcategorization frames. In the framework of transformational generative grammar the first hints as to how subcategorization frames could be formulated for bound morphemes can be found in Chomsky (1965). Analysing words like the following (Chomsky 1965: 186):

(3a)   *horror, horrid, horrify*
(3b)   *terror, *terrid, terrify*
(3c)   *candour, candid, *candify*
(3d)   *gramophone; phonograph, telegram*
(3e)   *frighten*

Chomsky (1965: 187) envisaged two ways of accounting for them:

(4a)   "incorporate in the grammar overly general rules that allow for non-occurring as well as actual cases," or
(4b)   "extend the theory of the lexicon to permit some 'internal computation,' in place of simple application of the general lexical rule..."

Recall that the lexical rule as formulated in Chomsky (1965: 84) took on the following shape:

(5)   If Q is a complex symbol of a preterminal string and (D, C) is a lexical entry, where C is not distinct from Q, then Q can be replaced by D.

where D is a phonological distinctive feature matrix spelling out the phonological shape of a morpheme (formative) and C is a collection of specified syntactic features.

In order to implement the option in (4b), Chomsky (1965: 187) formulated the following entries for the morphemes composing the words in (3):

(6a) $(tele \frown Stem_1, [F_1, ...])$
(6b) $(Stem_2 \frown ify, [G_1, ...])$
(6c) $(Stem_3 \frown en, [H_1, ...])$

(7a) $(graph, [+Stem_1, ...])$
(7b) $(horr, [+Stem_2, ...])$
(7c) $(fright, [+N, +Stem_3, ...])$

with the specifications enclosed between square brackets standing for syntactic features.

By present-day standards, (6b, c) specify co-occurrence restrictions on affixes, and (6a) states co-occurrence restrictions on a bound non-affix morpheme.

The non-asterisked words in (3) can be accounted for by the lexical rule in (5) entering the items in (6) into strings formed by the phrase structure rules. The lexical rule can then reapply, inserting the items in (7) into the strings formed by the previous application of the lexical rule.

The practice of entering items like (6b, c) into the lexicon runs counter to Chomsky's (1965: 84) idea of a lexicon as "an unordered list of all lexical formatives." It appears that as early as 1965 the lexicon was extended to include not only all lexical but also at least some of the grammatical formatives (morphemes).

The question of how the contexts for bound morphemes should be formulated received careful consideration in the lexicalist framework developed after the publication of Chomsky (1970). However, many of the solutions proposed could be traced back to Chomsky's (1957) insight that morphemes can convert some categories into other categories. This stance is conspicuous in Chomsky's (1957: 40-41) description of the functioning of the morphemes *to* and *-ing* in English:

(8)   ...the morphemes *to* and *ing* play a very similar role within the noun phrase in that they convert verb phrases into noun phrases, giving, e.g.:

[a] $\begin{Bmatrix} \text{to prove that theorem} \\ \text{proving that theorem} \end{Bmatrix}$ was difficult.

etc.

This property of the morphemes was captured by the following rule (Chomsky's 1957: 41 in (33)):

(9) $NP \rightarrow \left\{ \begin{matrix} ing \\ to \end{matrix} \right\} VP$

added to the grammar.

The intuition that morphemes may be added to strings of category α to form units of category β, where α and β need not differ, was common to both pre-lexicalist and lexicalist researchers. For instance, Chomsky and Halle (1968: 11, 27) represented the internal structure of *mended* and *eraser* as:

(10a) $[_V[_V mend]_V past]_V$
(10b) $[_N\#[_V\#erase\#]_V r\#]_N$

The formative *past* attaches to strings of category V to form strings of category V. On the other hand, the formative *-r#* attaches to strings of category V to form strings of category N.

Working within the lexicalist framework, Siegel (1974) made the following statement with respect to suffixes (p. 108):

(11) The lexical entry for each suffix,[...], minimally contains information specifying (1) the category of the items the suffix attaches to and (2) the category of the items derived by suffixation.

Siegel (1974) captured the fact that "prefixes precede the items they attach to" (p. 106) and "[s]uffixes follow the items they attach to" (p. 108) by attaching the labels *P* and *Suf* to the brackets enclosing prefixes and suffixes, respectively. The labels thus showed the position of the bound morphemes with respect to the units they attached to.

Siegel (1974) is a minimal specification of lexical entries for affixes. Less than a decade later, Selkirk (1982: 5, *passim*) characterized lexical entries for affixes in greater detail. In particular, the lexical entry of an affix included all its idiosyncratic properties, which are of three types:

(12a) syntactic
(12b) semantic
(12c) phonological

Siegel's (1974) characterization of affixes forms part of the properties mentioned in (12a).

The semantic properties of an affix surface in, among other things, the formula which specifies the meaning of the items derived by attaching the affix. For instance,

the meaning of adjectives derived from verbs by *-able* attachment can be specified by the general formula in (13) (Selkirk's 1982: 62):

(13) able to be V-ed

where *V* is the verb to which the suffix -able has attached.

The idiosyncratic phonological information includes a distinctive feature matrix (for the non-zero affixes), which captures the abstract phonological shape of an affix, as well as properties which show up in the phonological realization of the morphemes to which the affix is attached.

Depending on the theoretical orientation within which the given description is couched, the syntactic properties of affixes can be variously stated.

In the standard model of transformational generative grammar the general thrust was for the grammatical morphemes, affixes included, to be introduced by rule. Consequently, they had no separate entries in the lexicon. (But see the discussion above, especially of the items in (3).) In the post-Chomsky (1970) developments, affixes were provided with lexical entries on a par with the lexical formatives. Such was the approach of Halle (1973) who postulated that the grammar of a language should contain a list of morphemes, including affixes, both derivational and inflectional (pp. 3, 6). Siegel (1974) took a different position in that only the derivational affixes were listed in the lexicon along with underived words and stems, with the inflectional affixes being handled by the rules of the syntax. In the late 1970s Halle's option won out.

Returning now to the question of representing the syntactic properties of affixes, recall that, minimally, the representation must include the category of the items to which an affix attaches, the category of the derived entity, and the position the affix occupies in the derived item.

Lieber (1980: 43, *passim*) wrote subcategorization frames for affixes as follows:

(14) (*-ung, -ungen*)...subcategorization: $]_V$ — $]_N$

This way of writing subcategorization frames for affixes was rejected by Selkirk (1982: 5) who restricted the information carried by the subcategorization frame of an affix to the "specification of the category to which the affix may be sister in morphological structure." She intended her treatment of affixes to be analogous to the treatment of verbs in Chomsky (1965). Recall that Chomsky's (1965: 94) subcategorization frames for verbs, presented selectively below (his in (41)):

(15a) *eat*, [+V, + — NP]
(15b) *elapse*, [+V, + — #]
(15c) *grow*, [+V, + — NP, + — #, + — Adjective]

etc.

make reference only to the verb's sister, not to the dominating category (the mother node). The latter is provided by phrase structure rules of the following form (Chomsky's 1965: 72 in (12)):

(16a) VP → V⌢NP   (*examine Bill*)
(16b) VP → V   (*leave*)
(16c) VP → V⌢NP⌢Sentence   (*persuade Bill that John left*)
(16d) VP → Copula⌢Predicate (*be President*)

Selkirk (1982) formalized the claim made by other researchers, for instance Halle (1973: 3), that the grammar of a language should contain rules of word formation (along with a list of morphemes) by formulating a set of context-free rewrite rules which she called *word structure rules* (p. 4). Extending context-free rewrite rules from syntax (renamed *S-syntax* by Selkirk 1982: 2) to word structure (dubbed *W-syntax*, p. 2) reflected her conviction that "word structure has the same general formal properties as syntactic structure [...] that it is generated by the same sort of rule system".[2]

The rule system of S-syntax and W-syntax was couched in terms of the X-bar notation first proposed for syntax by Chomsky (1970). The original assumption was that phrase structure rules conform to the scheme in (17) (Chomsky's 1970: 210 in (48)):

(17) $\bar{X}$ → X ...

where *X* is a variable ranging over N, A, and V, and the bar above the variable specifies the level that the category occupies in the X-bar hierarchy. In Chomsky (1970) the hierarchy contained only three levels: X (the level of lexical categories, i.e. words), $\bar{X}$, and $\bar{\bar{X}}$ (the level of phrases).

In the original 1977 version of Selkirk (1982) the extension of X-bar syntax to W-syntax resulted in the establishment of two categories below the word (X), namely X^{-1} (alternatively X^{stem}) – the category *Stem*, which is one level below the category Word, and X^{-2} (or X^{root}) – the category *Root*, which is one level below the category Stem. In Selkirk (1982: 98) this three-way category type distinction among Word, Stem, and Root was reduced to a two-way distinction, Word versus Root.

Furthermore, in contrast to Siegel's (1974: 105 ff.) claim that prefixes and suffixes along with stems belong to no syntactic category and Williams's (1981: 249) restricted observation that suffixes, but not prefixes, belong to syntactic categories, Selkirk (1982: 59) extended category membership to all affixes. It should be noted at this point that category membership of affixes is crucial in establishing the category of the mother node in derived words. The subcategorization frames of affixes taken jointly with the word structure rules would not suffice to do the job. For instance, there are several suffixes in English which are subcategorized for nouns. The following are examples:

(18a) *-er*:   villager
(18b) *-hood*: boyhood
(18c) *-ize*:   pyramidize[3]
(18d) *-less*: friendless
(18a) *-ly*:   friendly
(18a) *-ship*: ladyship

etc.

If the W-syntactic rules were of the following form:

(19)   A → N Af

and the subcategorization frames of affixes took on the shape in (20):

(20a) *er*:   [N _]
(20b) *hood*: [N _]
(20c) *ize*:   [N _]
(20d) *less*: [N _]

etc.

then there would be no way of determining which of the suffixes should occur in the class of adjectives specified by the rule in (19).

Selkirk (1982: 66) resolved the issue by writing the W-syntactic rule in (19) as (21) (hers in (3.6a)):

(21) A → N A^{af}

and the category assignment as well as subcategorization frame for, for instance, *-less* as in (22) (hers in (3.8)):

(22)   *less*: a A^{af}
                     b   [N _]

It goes without saying that Selkirk achieved her end by introducing a certain amount of redundancy into the description. The redundancy involves the repetition of part of

---

[2] Rewrite rules present one way of capturing syntactic and morphological patterning. McCawley (1968) made an attempt at simplifying the rewriting system by replacing rewrite rules with what he called *node admissibility conditions*. The latter assume the following form:

(i)   <A; BC>

The formula says that a node is admissible if it is labelled *A* and directly dominates two nodes, the first labelled *B* and the second *C*.

---

[3] Note that *-ize* also attaches to adjectives. In fact, the deadjectival verbs in *-ize* outnumber the denominal verbs.

the information inherent in the word structure rule in (21) by the subcategorization frame in (22). That is, both state that in English sequences made up of a noun plus an adjectival suffix are admissible.[4]

Subcategorization frames for affixes combined with word structure rules are unable to explain why certain sequences of morphemes are systematically ruled out. Siegel (1974) resorted to what came to be known as *the Level-Ordering Hypothesis*. The latter requires that the affixes of English (and possibly other languages) be divided into two classes, Class I and Class II, and that Class I affixation precede Class II affixation. One of the consequences of the ordering of affixation processes is that Class I affixes never occur outside Class II affixes.

Let us consider a concrete example. Based on the subcategorization features of *-less*, the word structure rules of English will form adjectives like *colourless*. If the Level-Ordering Hypothesis is dismissed, the word structure rules of English will further derive the abstract noun *colourlessity* in agreement with the subcategorization frame of *-ity*, which may be written as:

(23) *ity*:
    a. N^{af}
    b. $[A \_]$

However, if the Level-Ordering Hypothesis is involved, the derivation **colourlessity* is blocked on account of *-ity* being assigned to Class I and *-less* to Class II.

Siegel's (1974) Level-Ordering Hypothesis imposed extrinsic ordering on affixation processes. Selkirk (1982) replaced *extrinsic* ordering with *intrinsic* ordering by writing the information on the class membership of the particular affixes into their subcategorization frames. Specifically, reference to class membership is attached to the affix's sister, as in (24) (one of Selkirk's 1982: 84 lexical entries in Table 3.4):

(24) *ity*:
    a. N^{af}
    b. $[A^r \_]$

The resulting noun, i.e. the mother node, is also of type X^r. This detail is not indicated in the subcategorization frames themselves but in the word structure rules. One of the word structure rules deriving nouns from Root-level adjectives has the following shape (Selkirk's 1982: 82 in (3.23a)):

(25) $N^r \rightarrow A^r N^{af}$

The rule makes it clear that a noun derived from a Root-level adjective is itself a Root-level entity.

The adjective *colourless* referred to above is a Word-level unit because the suffix *-less* has the following enriched subcategorization frame:

(26) *less*:
    a. A^{af}
    b. $[N^w \_]$

and the rule which derives adjectives from Word-level nouns has the following form (a variation on one of Selkirk's 1982: 82 rules in (3.23b)):

(27) $A^w \rightarrow N^w A^{af}$

That is, the derived adjective is a Word-level entity. Since *colourless* is a Word-level adjective, there is no way the suffix *-ity* can combine with it without violating its own subcategorization requirements.

The distribution of an affix can also be effectively restricted by the phonological properties of its sister. For instance, Siegel (1974: 164–165) quoted Ross (1972) as having imposed the following phonological restrictions on the attachment of the noun-forming suffix *-al*, which she assigned to Class II:

$$(28) \quad X \begin{bmatrix} +voc \\ +str \end{bmatrix} \left(\begin{bmatrix} -voc \\ -cns \end{bmatrix} \right) C_0^1]_V$$

The restrictions make reference to both the position of stress in the verbal base to which the suffix attaches and the segmental composition of the base extending to the right of the stressed vocalic.

All prefixational and suffixational structures are binary. Their binarity is secured by both the subcategorization frames associated with the particular affixes and the rewrite word structure rules. Recall that, for instance, on Selkirk's analysis the subcategorization frame of an affix only mentions its sister. The affix and the sister it subcategorizes for always make up a binary structure. The prefixation and suffixation rules also mention only two constituents to the right of the arrow: an affix and its sister.

Prefixation and suffixation processes are not at issue here. That is why we will leave off their discussion at this point and proceed to the question of infixation and circumfixation in English.

Note in passing that English compound structures are all binary. This observation applies to both verbal and non-verbal compounds. The interesting thing about verbal compounds is that they incorporate only one constituent, viz. the one for which they are subcategorized. Roeper and Siegel (1978), who carried out an extensive study of English verbal compounds within a lexical transformational framework, observed that

"verbs with two obligatory complements will not participate in verbal compounding" (p. 247). Having developed a non-transformational analysis of English word structure including compounding, Selkirk (1982: 29, 64) arrived at a similar conclusion, though her case for binarity is stated for compounding and affixational structures separately. Discussing the internal structure of compounds like *tree eater*, Selkirk (1982: 29) claimed that, "by hypothesis, the grammar does not allow for tripartite structures of the type $_Z[X\ Y\ Af]_Z$..." For affixational structures, she proposed rewrite rules based on Chomsky's (1970) X-bar template like the following (hers in (3.4)):

(29) $X^n \rightarrow \varphi\ Y^m\ X^{af}\ \psi$

and claimed that whether or not the variables φ and ψ can be null is a matter of choice in the particular languages. Consequently, languages can make use of either binary or multiply branching word structures. "For English," she argued (p. 64), "φ and ψ are equal to zero, which is to say that the language has only binary word structures."

Later developments in the theory of generative grammar showed that linguistic structures at all levels, whether phonological, morphological, or syntactic, are binary. For instance, Larson (1988: 342) argued that double object constructions exemplified by the VP *send a letter to Mary* present strictly binary branching structures. In Pollock's (1989) analysis, *Sentence*, renamed *Tense Phrase*, is also a downright binary branching structure.

In government phonology, syllable constituents are all maximally binary. Even Chomsky and Halle's (1968) *n*-ary approach to stress has been replaced with a binary analysis of Liberman (1975) and others (for discussion, see Ruszkiewicz 2001: 77 ff.).

Given this picture of linguistic structures, the binarity of word structures presents no exceptions.

2. Infixation in English

Infixation viewed as the insertion of a bound affix morpheme into another, free morpheme appears to have been alien to the English language in its entire history.

Reszkiewicz (1973: 160) referred to the Old English verb *standan* 'stand' as containing the nasal infix -*n*- in the present and passive participle stems. On closer scrutiny, it appears that the -*n*- in the above-mentioned forms was due not to infixation in Old English, but to a reanalysis of the Proto-Germanic form *standan* which consisted of the base **sta*- and the suffix **-nd*-. In Old English the original suffix did not function as a separate morpheme, the present stem *stand*- being morphologically unanalysable. The Old English preterit forms *stōd* 'stood' and the plural *stōdon* were reflexes of the Proto-Germanic preterit **stōþ*, pl. **stōðun* which were formed from the base **stō*- by the addition of the suffix **-þ*, **-ð*-. (For details, see Onions 1966.) To all appearances, the Old English *standan* should not have been classed as a strong verb because it contained the dental suffix -*d*- in both the present and preterit forms. The vowel alternation *a ~ ō* was not derived from an apophonic series but was due to the existence of two related stems, *sta*- and *stō*-.

There were other weak verbs in Old English that were based on two related stems. For instance, *wyrċan* 'work' was based on the root *wurc*-, with the umlaut of -*u*- to -*y*- and the palatalization of -*k*- to -*ċ*- before -*jan*, but the preterit *worhte* was based on the root *worc*- with the spirantization of -*k*- to -*h*- before the dental suffix -*t*(*e*).

Generative phonologists, for instance Chomsky and Halle (1968: 196), postulated a rule that inserts a segment (sequence) inside a class of morphemes after they have combined with certain other morphemes. Chomsky and Halle (1968: 196) quoted the following sets of examples:

(30a) angle – angular – triangulate
(30b) circle – circulate
(30c) constable – constabulary
(30d) fable – fabulous
(30e) miracle – miraculous
(30f) title – titular

etc.

which required a rule that would insert the segment sequence /yūw/ or the segment /u/ in a well-defined context. In its final version, the rule was presented as (Chomsky and Halle's 1968: 196 rule in (56)):

(31) $\varnothing \rightarrow u\ /\ \begin{bmatrix} -\text{cont} \\ -\text{voc} \\ +\text{cons} \end{bmatrix} \_\ l + VC\ [-\text{seg}]$

A few years later, Rubach (1984: 37) dubbed the rule *U-Insertion* and incorporated it into his cyclic phonology framework. It assumed the following shape:

(32) $\varnothing \rightarrow u\ /\ \begin{bmatrix} +\text{obs} \\ -\text{cont} \end{bmatrix} \_\ [+\text{lat}] \begin{Bmatrix} ar \\ ous \end{Bmatrix}$

where $\begin{Bmatrix} ar \\ ous \end{Bmatrix}$ constitutes the morphological conditioning of the rule.

Other sets of morphologically related words, which happen to be much less numerous than the class in (30), for instance:

(33a) apostle – apostolic
(33b) Aristotle – Aristotelian
(33c) Rhodes [rəwdz] – Rhodesia [rəw'di:zjə]

require the insertion of different segments: [ɒ] in (33a) and [e] with a subsequent conversion to [i:] in (33b, c).

It is interesting to note at this point that nobody has ever claimed that the inserted entities have the status of morphemes. Consequently, the processes referred to above do not present instances of infixation in English.

In recent history English has developed infixation as a way of intercalating free morphemes into other free morphemes. The morphemes thus inserted are known as expletive infixes (Siegel's 1974: 179 term). The class includes:[5]

(34a) damn
(34b) goddam(n)
(34c) fuckin(g)
(34d) mother-fuckin(g)

Being free morphemes (words), they are assigned to syntactic categories (Adjective and Adverb) and are commonly used as intensifiers in slang.

Having a categorial status, the words in (34) can occur in syntactic structures. The following are examples (from *The Oxford English dictionary*, 2nd CD-ROM ed., if not indicated otherwise):

(35a) It's none of your dam' business.
(35b) I call it a damn poor show.

(36a) ... in this goddam town.
(36b) You're goddam right I want to go (*Webster's third*).

(37a) She was a magnificent bit of fucking flesh,...
(37b) The Young bloods were so fucking good...

Respectable dictionaries of the English language do not include citations illustrating the use of the compound *mother-fucking*. Those dictionaries which include the form among their entries assign it to the category Adjective.

The words in (34a-c), whose syntactic distribution is exemplified in (35) through (37), can function as both adjectives and adverbs. Their adjectival use is presented in (35a), (36a) and (37a) while their adverbial use is illustrated in the respective (b) examples. It is in their adverbial use that the items are referred to as *intensives*.

Regardless of whether the items in question function as adjectives or adverbs, they may optionally be shifted rightwards and infixed into the neighbouring word. This operation is possible if the right-hand neighbour satisfies certain phonological conditions. The formulation of the rule known under the label *Fuckin Rule* has been credited to Siegel (1971). The rule is reproduced below after Aronoff (1976: 69):

(38)   *Fuckin Rule*

$$[X \overset{3}{V} C_0 \left(\left[\begin{matrix} V \\ -str \end{matrix} \right] C_0 \right)_0 [infix] \overset{1}{V} Y]$$

Being committed to word-based morphology, Aronoff (1976: 70) rejected Siegel's version of the rule claiming that "there is no place in the rule where the base is specified as an independently existing entity." Also, in Aronoff's view, the rule failed to express the notion "formed from." Aronoff (1976: 70) reformulated the Fuckin Rule as follows:

(39)   *Fuckin Rule* (revised)

$$[X \overset{3}{V} Q \overset{1}{V} Y]$$
$$1 \quad 2 \quad 3 \quad 4 \quad 5 \quad \rightarrow \quad 1 \quad 2 \quad 3 \quad \text{fuckin} \quad 4 \quad 5$$

where Q contains no $\overset{3}{V}$

It appears that both Siegel's (1971) and Aronoff's (1976) formulations of the Fuckin Rule are highly unsatisfactory: neither expresses the fact that two syntactic constituents are in fact merged and the landing site for the infixed constituent is located immediately to the left of the rightmost strongest syllable, not immediately to the left of the primary stressed vowel.[6]

The fact that the expletive expressions in (34) merge with the categories they subcategorize explains why the following structures:

(40a) *damn guaran-damn-tee
(40b) *goddam(n) Ala-goddam-bama
(40c) *fuckin(g) fan-fuckin-tastic
(40d) *mother-fuckin(g) emanci-mother-fuckin-pator

do not obtain. The expressions in (40) all become correct if the initial expletive epithets are left out. In their unexpanded form they occur in Siegel (1974: 180, 182).[7]

The phonological conditions which determine the application of the Fuckin Rule are not easy to state. Both Siegel and Aronoff appear to indicate that the host which receives the expletive infix must have the stress pattern *31*. However, Siegel (1974: 181) adduces *emancipator* as a possible host for *mother-fuckin* infixation. All the

---

[5] This list might be complemented by the addition of somewhat less explicit items, namely *bloody* and *blooming*, the latter being euphemistic for the former. However, *bloody* and *blooming* pattern just like the terms in (34).

[6] The definition of the landing site for infixed constituents will be revised as we proceed.

[7] The PSiCL reviewer has called my attention to the interesting question of whether expletives exhibit semantic differences when they function as infixes in lexical structures versus attributive expressions in syntactic structures. Since the linguistic literature is silent on this issue, this particular problem area deserves a separate study.

dictionaries that I have consulted, whether British or American, give the stress pattern *13* for *emancipator*, which is the inverse of the pattern advocated by Siegel. Furthermore, since Siegel (1974: 181) reckons expletive infixes among Class II affixes, it follows that they may be sensitive to stress information inherent in the base they attach to but they cannot change the original stress pattern.

Other examples analysed by Siegel (1974: 190, n. 6), like the following:

(41a) *abso-goddam-lute

(41b) abso-goddam-lutely

strongly suggest that the stress pattern *31* is the preferred one.

Identifying the stress pattern inherent in the host which can receive an expletive infix is only part of the problem. What remains to be determined is the exact landing site for the infix inside the host. As was indicated above, the statement that expletive infixes land immediately to the left of the primary stressed vowel in the phonological structure of the host possessing at least one other stress is untenable. In contrast to the formal statements of the phonological conditions for expletive infixation, which suggest that the landing site for the infixes should indeed be located immediately to the left of the primary stressed vowel, Siegel (1974) and Aronoff (1976) never came up with anything close to (42):

(42a) $*\overset{3}{A}lab-goddam-\overset{1}{a}ma$

(42b) $*M\overset{3}{o}n\,o\,ngah-fuckin-\overset{1}{e}la$

etc.

as well formed infixed structures.

What is needed here is reference to the syllabic structure of the host. However, phonological research carried out in the last twenty years or so has marked the demise of the syllable. For instance, Halle and Vergnaud (1980: 93) took the following position on the question of the syllable:

(43) Our studies have uncovered many phonological processes where the constituents of the syllable – in particular, the onset and rhymes – function independently of one another. In fact, it appears to us that the superordinate unit, the syllable, plays a much more marginal role in phonology than do its constituents.

As a first approximation, we might claim that the landing site for English expletive infixes is determined by the prosodic structure of the word in the sense of Selkirk (1980) and later developments in prosodic (metrical) phonology. In particular, given Selkirk's (1980: 570) position that, "The category prosodic word is defined as being constituted of a sequence of one or more Σ or Σ' joined in a right-branching structure...," where Σ and Σ' stand for the stress foot and stress superfoot, respectively,

and Liberman and Prince's (1977: 270) *Lexical Category Prominence Rule* (LCPR), reproduced below:

(44) *Lexical Category Prominence Rule*
In the configuration $[N_1\ N_2]$, N_2 is strong iff it branches.

the site for the expletive infixes can be defined as immediately to the left of the non-initial strong stress foot. Since the relation *strong/weak (s/w)* can be defined only for a pair of nodes (stress feet in the case in hand), a word made up of a single stress foot (Σ or Σ') will not accept an expletive infix because its only stress foot is neither strong nor weak.

Selkirk (1980) recognized the syllable as a prosodic unit. The syllable was assigned a clear-cut structure which allowed the statement of prominence relations (see Selkirk's 1980: 569 *English Syllable Template* in (9)). Furthermore, the syllable was presented as a maximally binary branching entity, with its constituents being also binary branching. Consonant clusters were broken up appropriately into sequences which filled the coda of one syllable and the onset of the following syllable. In general, the analysis went smoothly except in complex clusters containing a [s] in their structure. For instance, the word *obstruct* would require the following analysis:
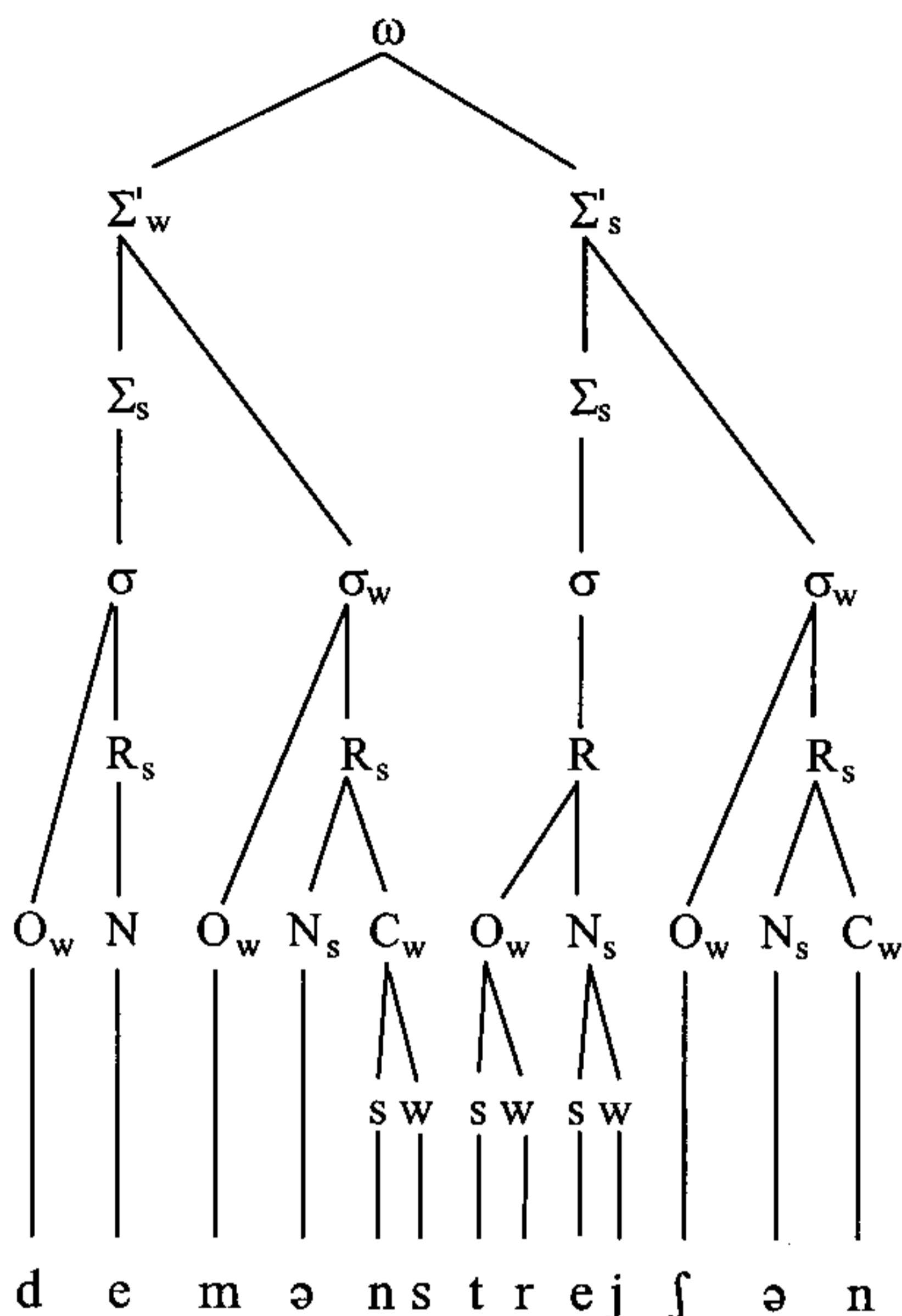
(45) ob$struct

where $ stands for syllable boundary, although the principle of maximal binarity does not admit of triliteral onsets like [-str-].

The abolition of the syllable makes it difficult to determine the exact landing site for English expletive infixes. Observe at this point that stress feet in Selkirk's (1980) sense can be erected on syllable nuclei alone. But then further principles are required to assign consonant clusters to stress feet. Recall that expletive infixation respects the integrity of stress feet.

It is to be noted that Selkirk's (1980) approach to the syllable and stress feet would make only partial predictions with respect to expletive infixation. Suppose that the infix *fuckin* is to be inserted into the word *demonstration*. The latter has the following prosodic structure:

(46)

[Prosodic tree diagram for *demonstrejʃən* (demonstration), showing: ω dominating Σ'w and Σ's; each dominating Σs and σ/σw nodes, R/Rs rhymes, and Ow, N, Ns, Cw constituents with s w s w weak/strong markings, over the segments: d e m ə n s t r e j ʃ ə n]

In order to preserve the integrity of the stress feet, the infix *fuckin* can occur only between the [s] and the [t], thus *demons-fuckin-tration*. However, native speakers of (American) English favour a slightly different version of the infixed noun, namely:

(47)   demon-fuckin-stration

The latter arises in violation of the requirement that the integrity of stress feet should be preserved.[8]
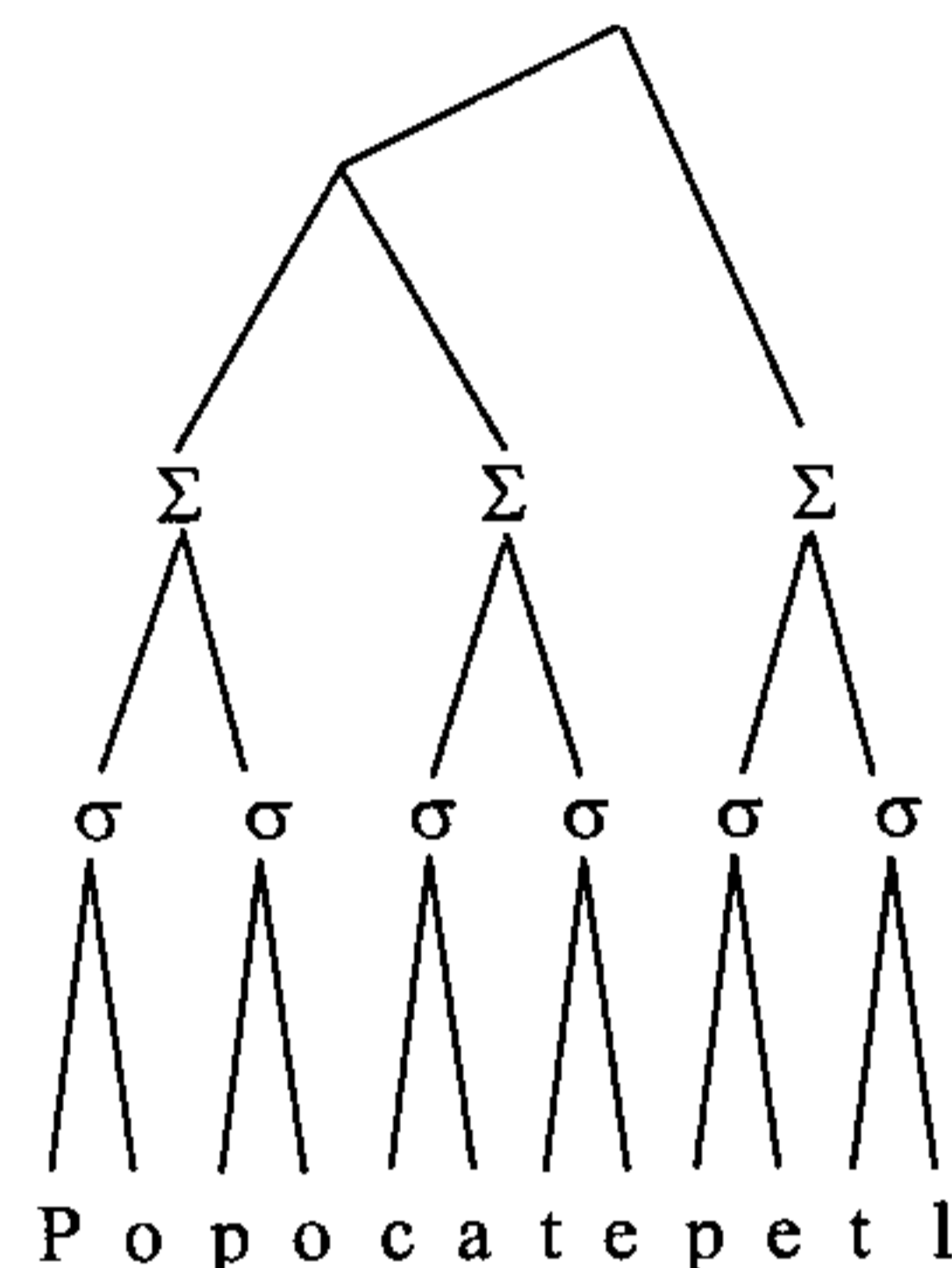
Selkirk's (1980) framework and other related approaches to prosodic phonology are descriptively inadequate in the sense of Chomsky (1964: 63) in that they fail to

specify as many landing sites for expletive infixes as prosodically complex forms can actually accommodate in agreement with the linguistic intuition of the native speaker.

The question of locating the landing sites for expletive infixes in English was exhaustively studied in the framework of prosodic phonology by McCarthy (1982). His findings corroborate the observation that expletive infixation respects the integrity of feet. McCarthy formulated a generalization which states that an infix can occur at an internal left foot boundary (pp. 578 ff.). If a word is made up of three feet, like Popocatepetl (one of McCarthy's 1982: 578 representations in Figure 2): two infixation sites are available, with the following:

(48)

[Tree diagram showing a top node branching to three Σ (foot) nodes, each dominating two σ (syllable) nodes, over the word: P o p o c a t e p e t l]

(49a)   Popo-fuckin-catepetl
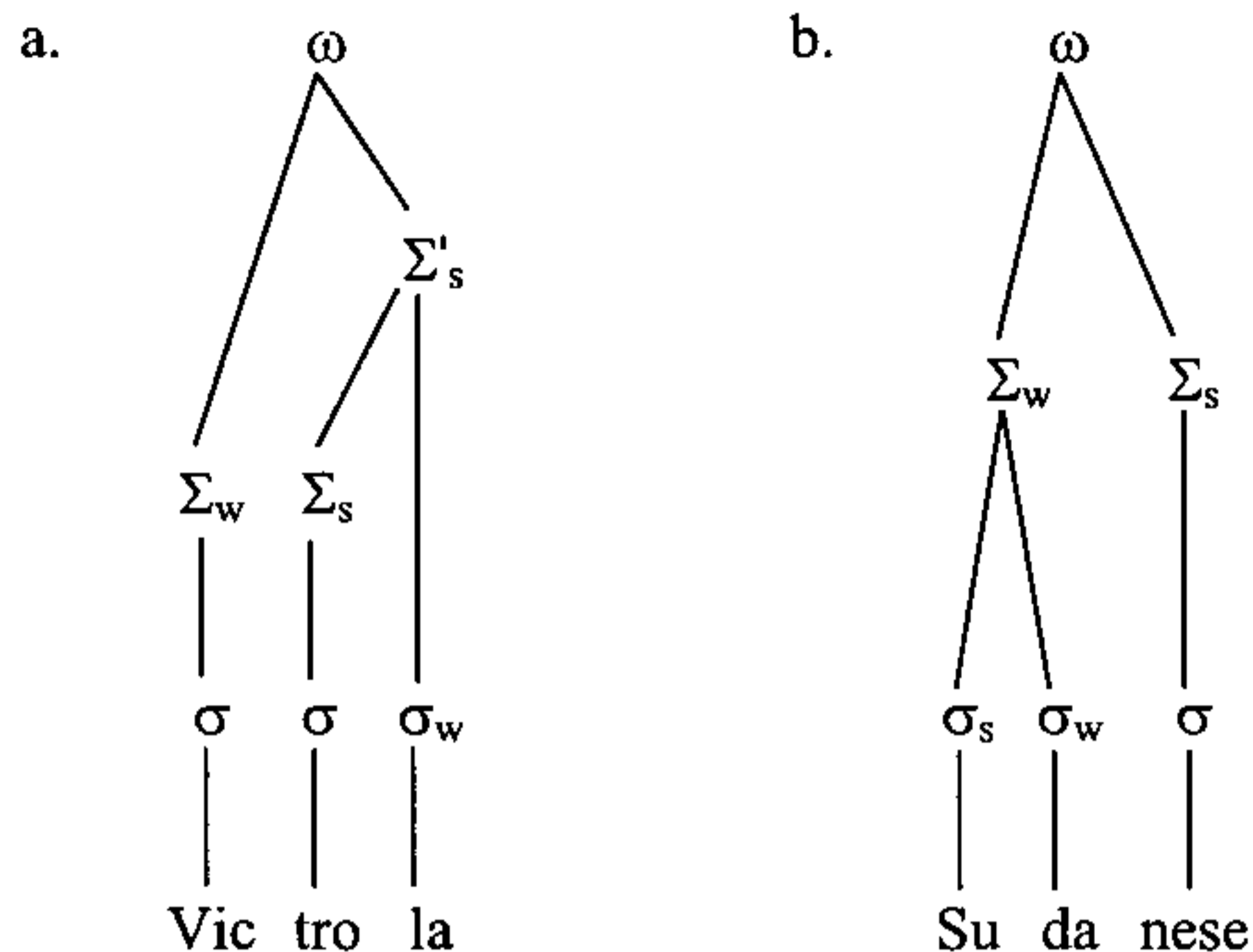(49b)   Popocate-fuckin-petl

being well-formed.

The properties of superfeet are somewhat different. McCarthy (1982: 582) used context-free rules (his in (13)):

(50a) $\Sigma \rightarrow \sigma\ (\sigma)$
(50b) $\Sigma' \rightarrow \Sigma\ \sigma$

to define the dominance and precedence relations between the foot (Σ), the syllable (σ), and the superfoot (Σ').

From the rules in (50) it follows that a stress foot may be disyllabic or trisyllabic. This indeterminacy can also be found in Selkirk (1980). For instance, the forms *Victrola* and *Sudanese* receive the following prosodic representations (Selkirk's 1980: 571, 584 in (11) and (23b), respectively):

---

[8]   See the discussion below on how the disfavoured (or less favoured) form *demons-fuckin-tration* can be accounted for in government phonology.

(51)

a.

Vic tro la

b.

Su da nese

The weights of the syllables *-tro-* and *Su-* are identical — they are heavy, and the weights of the syllables *-la* and *-da* are also identical — both are light. The superfoot Σ' will not accommodate any more syllables by definition. On the other hand, the disyllabic foot Σ can constitute part of a superfoot. The following is an example (in British English):

(52)   *omega* ['əwmigə]

o me ga
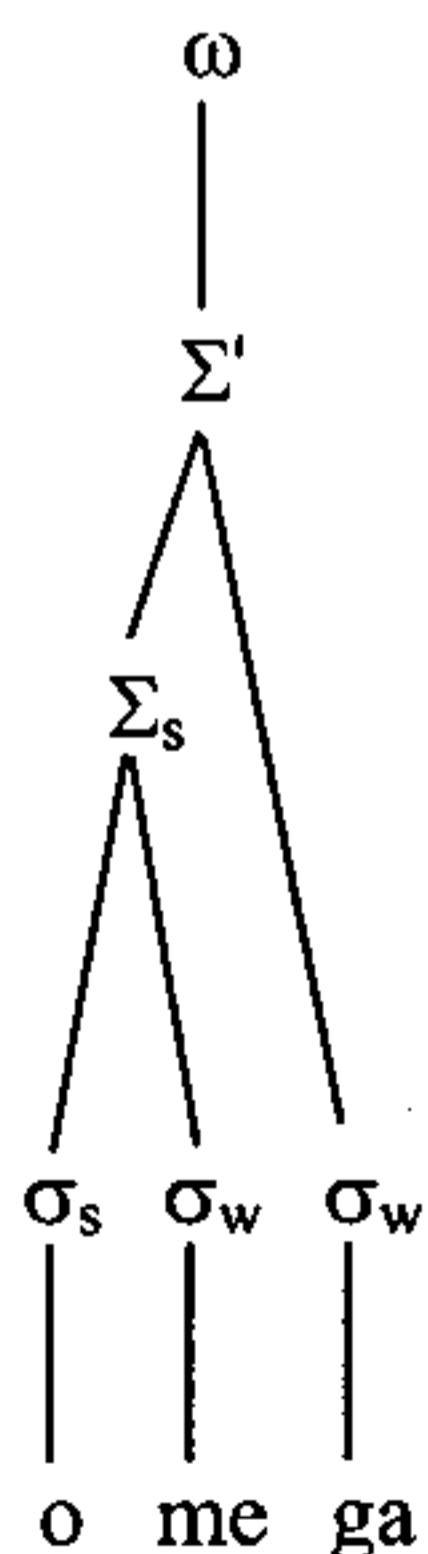
The specificity of non-final trisyllabic superfeet consists in that an expletive infix may be inserted between the disyllabic foot and the lonely final syllable. McCarthy (1982: 580) quotes Alan Prince's (personal communication) examples:

(53a) Tatamagouchee
(53b) Kalamazoo
          etc.

consisting of a trisyllabic superfoot followed by a disyllabic or monosyllabic stress foot, in which an expletive infix may fall at the boundary between the feet (the usual case):

(54a) Tatama-fuckin-gouchee
(54b) Kalama-fuckin-zoo

or inside the trisyllabic superfoot between the embedded foot and the lonely syllable:

(55a) Tata-fuckin-magouchee
(55b) Kala-fuckin-mazoo

McCarthy (1982: 582) refers to this position as "the point of weaker intersyllabic contact within the dactylic foot."

Government phonology, which was developed in the years following the publication of Selkirk (1980), adopted Halle and Vergnaud's (1980) observation quoted in (43) above. We will refer to those aspects of the theory which can cast a new light on the question of assigning consonants to certain domains.

In his recent study, Gussmann (2002: 206 ff.) recapitulates the findings of phonological research into stress assignment. Only phonologically realized nuclei can carry stress. Onsets, whether simple or complex (branching), have no role to play in the principles of stress assignment. However, languages differ with respect to whether or not codas play a part in shaping stress patterns. Specifically, the question boils down to the difference between simple and branching rhymes, where a branching rhyme is one incorporating a nucleus and a consonant as a rhymal complement. Irish, which Gussmann has investigated extensively, relies on the distinction between branching and non-branching nuclei for stress assignment. In English, on the other hand, it is the distinction between branching and non-branching rhymes that matters.

The prosodic (metrical) analysis of *demonstration* carried out along the lines of government phonology leaves the segment [s] in *demonstration* pendent between two stress feet, *demon-* and *-tration*. The following prosodic tree can be erected for the word:

(56)
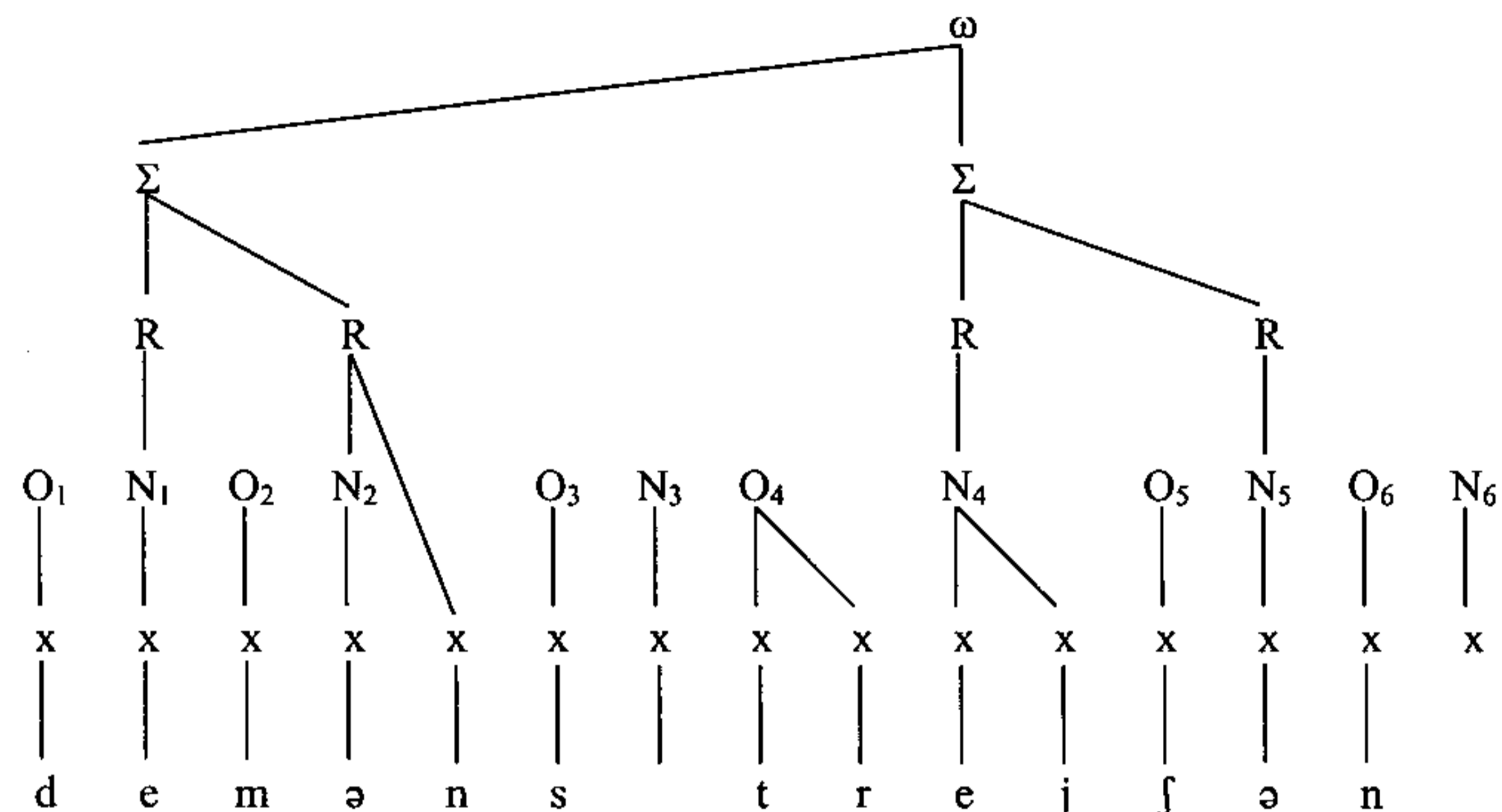
The notation used in the diagram is a compromise between Selkirk's (1980) practice employed above and Harris's (1994: 150 ff.) conventions. Following Harris (1994: 150), the vertical lines represent constituent heads. This move enables us to do away with the *s/w* labels used on sister nodes.

The diagram in (56) differs from the prosodic structure given in (46) in that empty nuclei are postulated to license the final consonant [n] and the intraword consonant [s]. The rhymes dominating the empty nuclei have no role to play in stress assignment: they stand aside, without being incorporated into the stress feet.

If no further details are provided for the tree in (56), it will be impossible to argue that an expletive infix should be inserted to the left of the [s] rather than to its right. Using a variation on McCarthy's (1982: 582) statement quoted above, we might say that the question boils down to finding *the point of weaker interconstituent contact within prosodic structures* like that in (56).

Harris (1994: 168) distinguished three types of governing domains (his in (29a-c)):

(57)
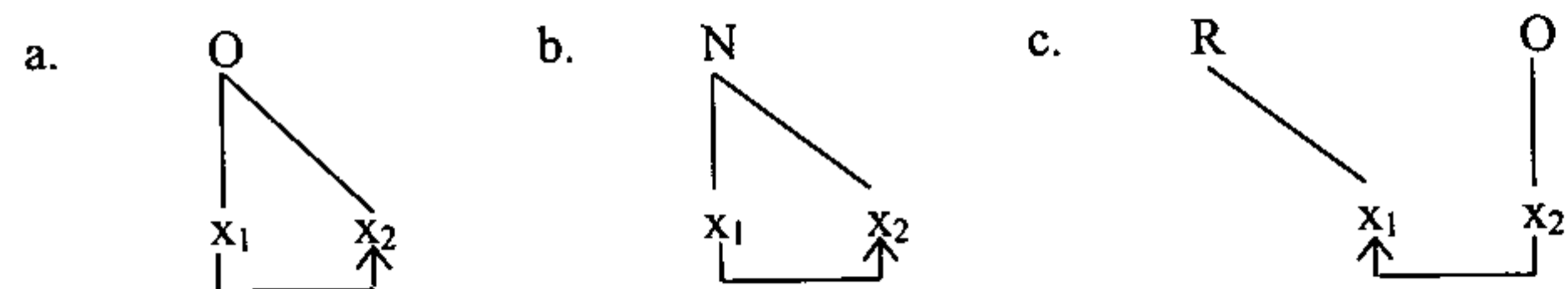
where x_1, x_2 are skeletal points (slots), O = onset, N = nucleus, and R = rhyme. The governing domains are special instances of licensing domains in which particular phonotactic restrictions are found to be universally in force.

To solve the issue of the interpedal [s] in (56), we must concentrate on the governing domain in (57c). The word *demonstration* has the following structure in terms of O, N, and R:

(58)
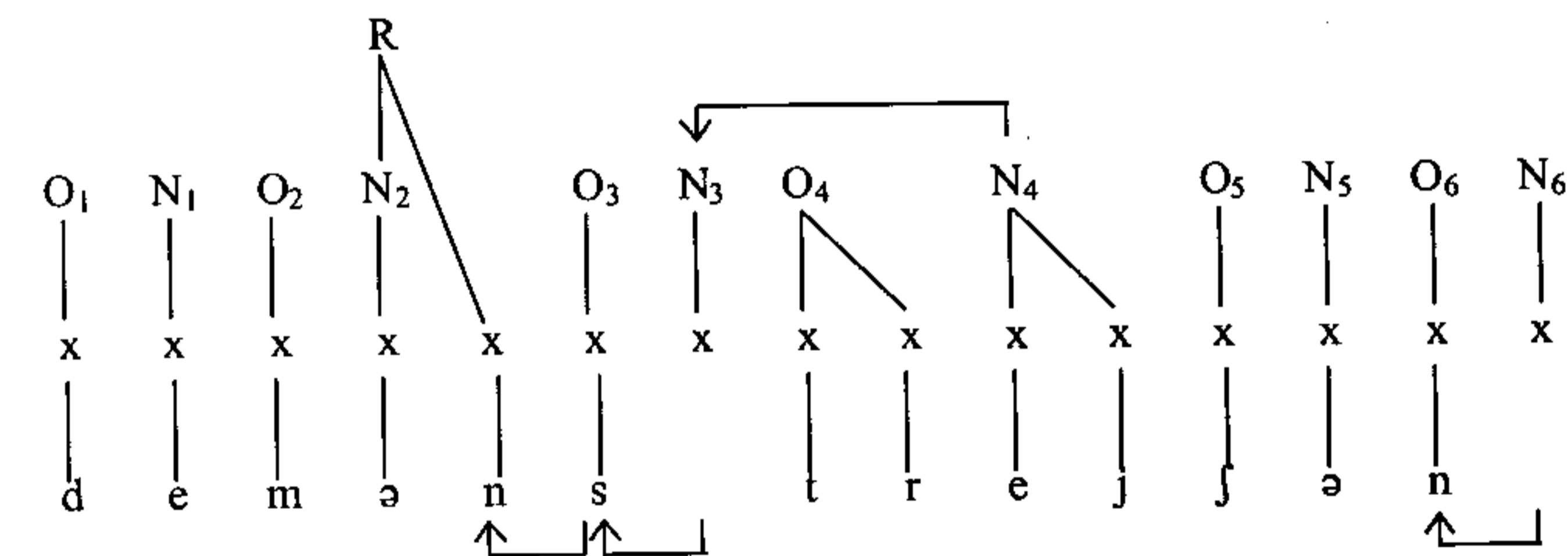
Since syllable constituents may be maximally binary branching, the rhyme dominating N_2 can only accommodate one consonant as its rhymal complement, which is [n] in the case in hand. The rhymal complement must be licensed by the following onset, which is O_3 realized here as [s]. O_3 must itself be licensed by a nucleus, albeit empty (N_3). Empty nuclei must be licensed. Final empty nuclei are parametrically licensed in the following way (Harris's 1994: 162 formulation of the parameter):

(59)   *Final-empty-nucleus parameter*
       Final empty nucleus licensed [OFF]/ON

Languages, like English, which allow word-final consonants select the setting ON on the parameter.

In domain-medial position, an empty nucleus must be licensed by another, non-empty nucleus. Harris (1994: 191) invokes the phenomenon of *Proper Government* conceived of as a more restrictive case of projection licensing. Thus the empty nucleus N_3 in (58) is properly governed by the non-empty nucleus N_4.

To return now to the question of determining the point of weaker interconstituent contact in (58), which is crucial for defining the insertion site for expletive infixation, Harris's (1994: 206) notion of autosegmental licensing potential will be found useful here. The point is that an unlicensed position is invested with a (finite) stock of autosegmental licensing potential which is dissipated to licensed positions. The relation between a licensor and the position it licenses is captured by what Harris (1994: 206) calls *Licensing Inheritance Principle*, reproduced below:

(60)   *Licensing Inheritance Principle*
       A prosodically licensed position inherits its autosegmental potential from its licensor.

Since the licensed position always receives an attenuated autosegmental licensing charge from its licensor, in a sequence of licensor-licensee pairs on an unbroken licensing path, the autosegmental licensing potential of a licensed position will be determined by, among other things, the number of removes from the ultimate licensing source.

Given the example in (58), we are now considering licensing relations within the stretch [-nstrej-]. We will refer to the complex nucleus [ej] (= N_4 in (58)) as the ultimate source which licenses the empty nucleus N_3. The latter in turn licenses the onset O_3 (= [s]) which licenses the rhymal complement [n].

It appears that the licensor [s] has very little autosegmental licensing charge to pass on to the preceding position because, in the first place, it occurs at two removes from the ultimate licensing source N_4, which means that its autosegmental licensing power is doubly diminished, and, secondly, its immediate licensor N_3 happens to be an empty nucleus.

Bloch-Rozmej (1994), who studied the distribution of geminates in Irish, has found out that in Irish an empty (i.e. properly governed) nucleus does not equip the preceding onset with enough power to properly govern another onset. It appears that the autosegmental licensing charge received by a position from an empty constituent is lesser than the corresponding charge received form a phonologically realized position.

It follows that, given the principles of government phonology, two points of weaker interconstituent contact can be determined: one between [n] and [s] and another between [s] and [t]. Thus we have to do here with a certain amount of indeterminacy with respect to infix insertion. The majority of native speakers of English choose the left-hand point of weaker interconstituent contact as the site for expletive infixation. However, McCarthy (1982: 575) quotes three infixed forms based on the word *instantiate* (his in (4c)):

(61a)   in-fuckin-stantiate – which is fully grammatical,
(61b)   inst-fuckin-antiate – which is impossible, and
(61c)   ins-fuckin-tantiate – which is marginal but acceptable

He refers to examples of type (c) as reflecting "a certain amount of uncertainty in the syllabification of particular cluster types" (pp. 575-576). The existence of forms like (61c) shows that the second point of weaker interconstituent contact can also be used for expletive infixation.[9]

Within the theory of government phonology more insertion sites can be defined for expletive infixes than in Selkirk-(1980)-based approaches. Consequently, government phonology comes closer to the level of descriptive adequacy in the area of infixation than those other approaches do.

The foregoing discussion shows that the insertion site for expletive infixation in English may be stated as a domain-internal foot boundary, where the term *domain* refers to the phonological word of prosodic theory. Domain-peripheral foot boundaries are out on account of the very nature of infixation, which differs from preposition and postposition, prefixation and suffixation. An infixed element ends up flanked by two constituents, either constituting a foot. Since in theories like that of government phonology the notion of the syllable has been abolished, consonants may be found between feet, which are erected on rhymes, without being assigned to any particular foot. These consonants are related to neighbouring rhymes by virtue of licensing relations. The relations may be used to define points of weaker interconstituent contact at which expletive infixes may lodge.

It is important to note that prosodic conditions on expletive infixation are best stated at the stage when feet are erected, before any processes like Selkirk's (1980: 585) Defooting have applied. For instance, on the surface, the adjective *important* presents a phonological word (ω) which is made up of an initial unstressed syllable followed by a disyllabic foot. And yet the infixed form in (62) (one of McCarthy's 1982: 576 examples in (7)):

(62)   im-fuckin-portant

is well-formed.

The secret lies in the foot structure associated with the word prior to Defooting (specifically, Prefix Defooting, cf. Selkirk 1980: 586, n. 14) which is bi-pedal. The following is a simplified representation:

_____

9   Strangely enough, McCarthy (1982: 581, n. 6) classifies the infixed form *mons-fuckin-trosity*, which is parallel to (61c) in all respects, as ungrammatical, marking it with an asterisk.

(63)

im   por   tant
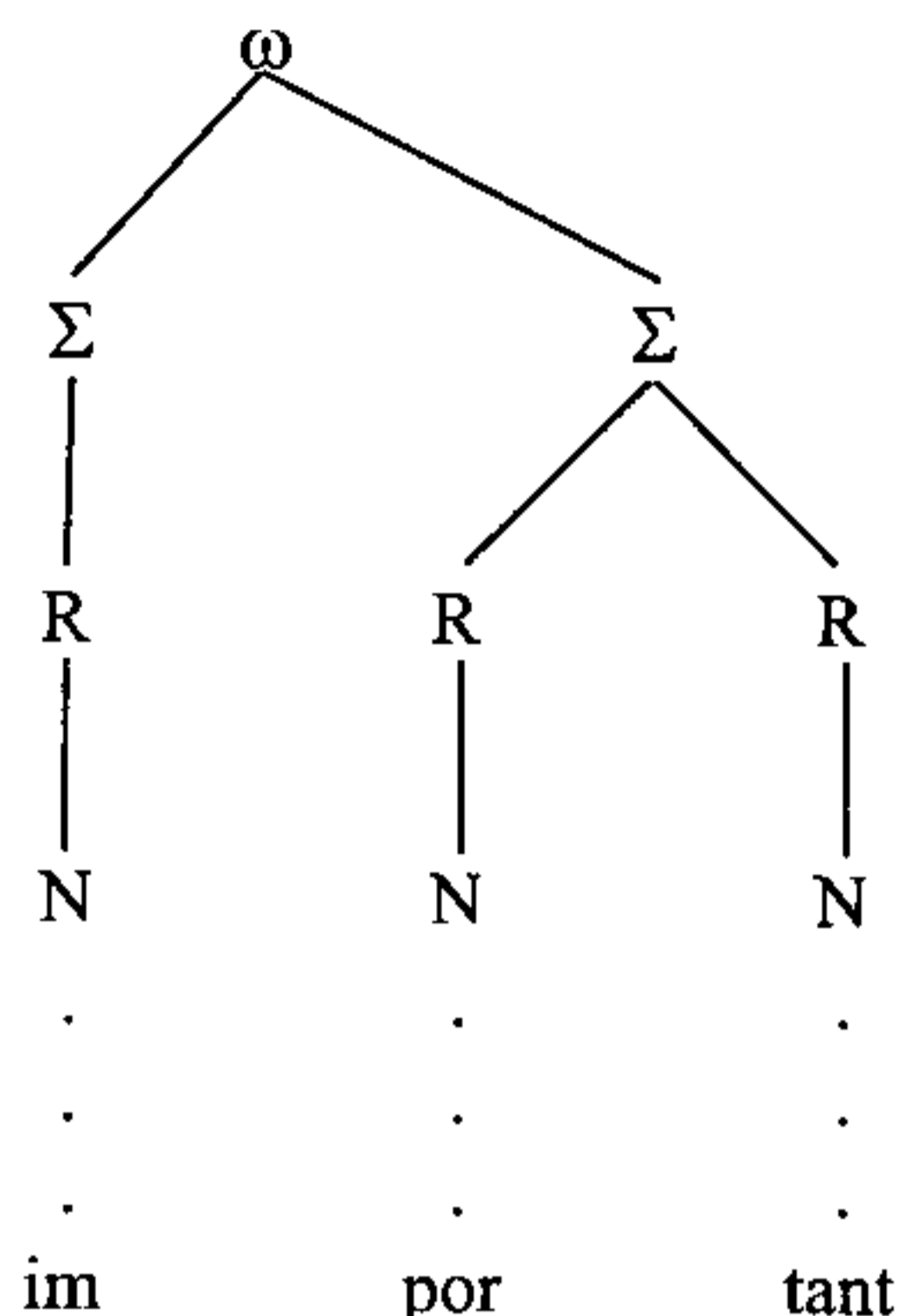
This structure does meet the requirements of expletive infixation, providing a single insertion site.

It appears that the class of forms represented by *Tatamagouchee*, which provide two insertion sites for expletive infixes (cf. (54)-(55) above), may be analysed as having the antepenult assigned the status of a separate foot, a possibility also entertained by McCarthy (1982: 585, n. 9). The antepenult is ultimately defooted by what Selkirk (1980: 592) called *Medial Defooting*. The latter is motivated by such forms as:

(64a) compete
(64b) degrade
(64c) imbibe

etc.

whose final rhymes support separate feet. The feet are abolished in the derived forms in (65):

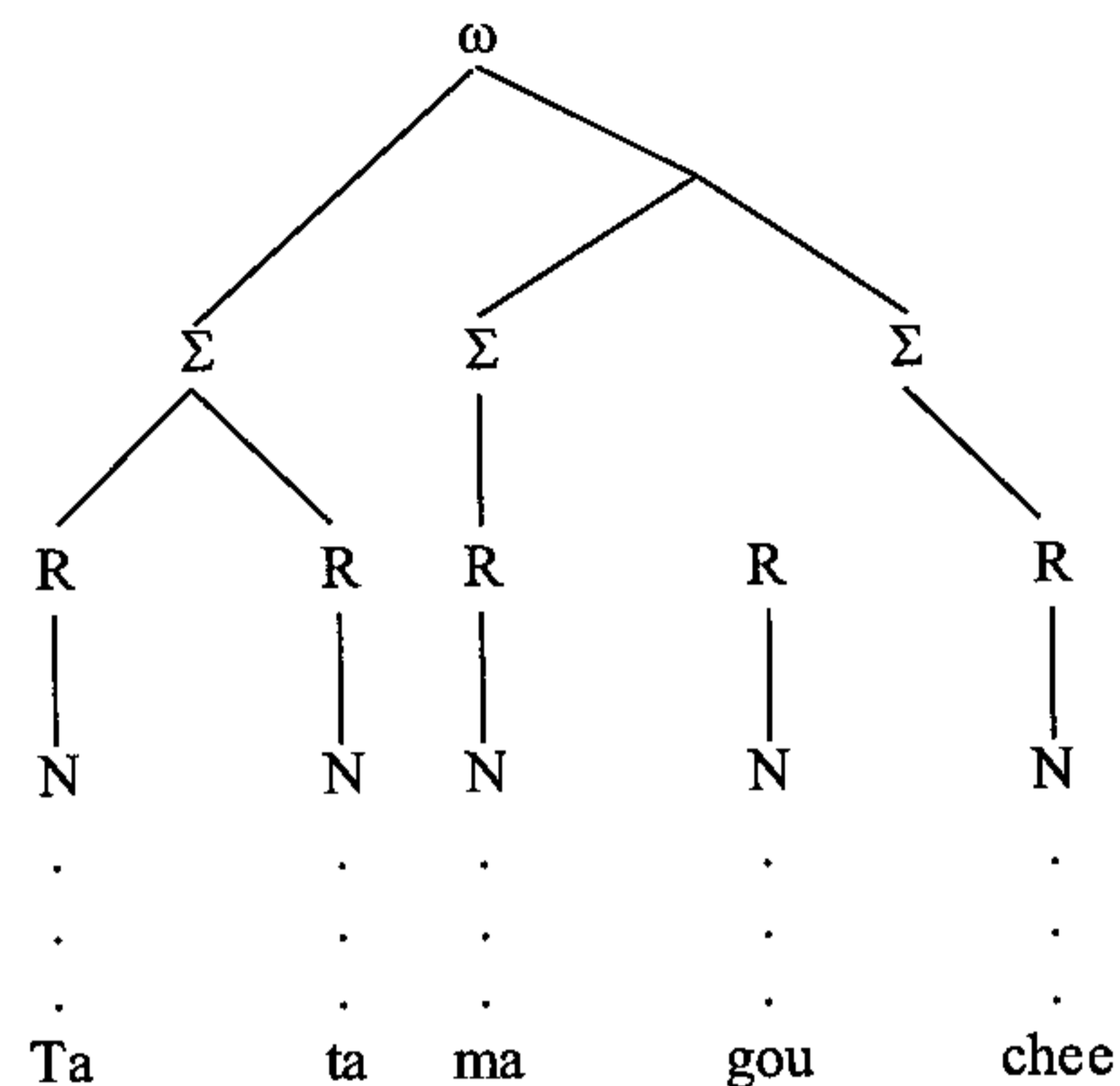(65a) competition
(65b) degradation
(65c) imbibition

etc.

with the vowels of the defooted units reduced.

Prior to Medial Defooting, the pedal structure of *Tatamagouchee* is something like the following:

(66)

Ta   ta   ma   gou   chee

The structure defines two loci for expletive infixation (cf. the discussion above).

Let us now turn to the problems posed by the class of forms exemplified by *emancipator*. As noted above, all respectable dictionaries of English specify the fourth syllable from the end as the bearer of primary stress. Yet the infixed form, *emanci-mother-fuckin-pator*, is adduced in Siegel (1974) with primary stress on the penult. There is an apparent clash between the nature of infixation in English, which is claimed to be stress-sensitive but non-stress-determining, and the shift of primary stress in the infixed form.

First, let us digress to a discussion of the adverb-forming suffix *-ly*. There is unanimity among linguists that the suffix is a Word-level affix and as such it is non-stress-determining. However, there is a class of adverbs in *-ly* which do not preserve the original locus of stress. They are derived from adjectives in which the primary (or only) stress falls on the antepenult or on the fourth syllable from the end. Compare the following:

(67a)   nécessary — nécessárily
(67b)   prímary — primárily
(67c)   mómentary — mómentárily

etc.

where the secondary stresses are ultimately weakened to tertiary by convention, giving the stress pattern *31*.

It is true that the shift of stress occurs after *-ly* suffixation has applied. But it would be premature to claim that this is crucial evidence in favour of the Root-level status of the suffix. The contribution of *-ly* suffixation here boils down to the fact that another syllable has been added to the adjectives with primary stress on the fourth (or third) syllable from the end of the word, the resulting pattern being a primary stress followed by four to five unstressed syllables.

Hayes (1984), who has studied the issue of speech rhythm extensively, has proposed a "rhythmic interval" theory with the aim of accounting for the isochronous nature of speech. The isochrony of speech consists in that stresses occur at more or less equal intervals. The intervals between consecutive stresses are not arbitrary. To capture the isochrony of stress, Hayes and Puppel (1985: 62) formulate a principle which they call the *Quadrisyllabic Rule*, reproduced below:

(68) *Quadrisyllabic Rule*
A metrical grid is eurhythmic when it contains a row of marks spaced about four syllables apart.

Reducing the problem of rhythm to the level of phonological words, the principle says that, optimally, two consecutive stresses will be separated by at most three syllables, and the space between the rightmost stressed syllable of a word and its right edge will be filled by no more than three unstressed syllables. Whenever these regularities are infringed, stress adjustment takes place.

Going back to the stress assignment problems posed by the suffixed items in (67) and the infixed items represented by *emanci-mother-fuckin-pator*, we may preserve their status as non-stress-determining units and account for stress adjustment by reference to Hayes and Puppel's (1985) Quadrisyllabic Rule.

It goes without saying that the rule in hand constitutes a tendency rather than an exceptionless principle. For instance, McCarthy (1982: 582, n. 7) quotes words with surface quadrisyllabic feet:

(69a) dubitative
(69b) nominative

It is interesting to note that many of them preserve the original position of primary stress even if another syllable is added, as in:

(70) dubitatively

which the OED lists as an adverb with word-initial primary stress.

3. Circumfixation in English

As was indicated in the *Introduction*, circumfixation is a relatively recently recognized mode of forming words. Circumfixes are believed to be composed of a prefix-like element and a suffix-like element attached simultaneously to a base so that they straddle it. There are numerous bases with which either of the constituents may function separately. On the other hand, those cases in which the base needs to be straddled, i.e. circumfixed, are scarce as compared to the total number of affixed words. It appears that there is an air of markedness surrounding circumfixed forms.

As mentioned above (see Section 1), English affixational structures are binary. This property is encoded in the subcategorization frames of affixes, which mention a single sister node each, and in the way the rules of English word structure are formulated. Recall Selkirk's (1982) general formula (X-bar template) for affixational structures given in (29) above, reproduced for the reader's convenience below:

(71) $X^n \rightarrow \varphi \, Y^m \, X^{af} \, \psi$

where the choice made in English is such that the variables φ and ψ are equal to zero.

It is easy to see that the template in (71) would generate circumfixational structures if the choice were made for ψ to be equal to zero, with φ ranging between zero and a positively specified constituent. A question imposes itself forcibly at this point: Why should the grammar of English make such an asymmetrical choice?

If the choice of values for φ and ψ is subject to parametric variation, then there should be languages in which the variables are non-null. Such languages (Dutch, German, Tagalog, Tondano) are adduced in Lieber (1992: ch. 5), and Carstairs-McCarthy (2002: 74) contrasts English with other languages in the following way:[10]

(72) ...in English, derivational processes operate by adding no more than one affix to a base — unlike languages where material may be added simultaneously at both ends, constituting what is sometimes called a *circumfix*.

Furthermore, Carstairs-McCarthy (2002) observes that there are no uncontroversial examples of circumfixes in English and adds that:

(73) The only plausible candidate for a circumfix in English is the *en-...-en* combination that forms *enliven* and *embolden* from *live* and *bold*; but *en-* and *-en* each appear on its own too, e.g. in *enfeeble* and *redden*, so an alternative analysis as a combination of a prefix and a suffix seems preferable.

Based on a loose definition of *circumfix*, we might expand the inventory of discontinuous affixes in English and set up the following (highly incomplete) list:

---

[10] Thanks to Bogdan Szymanek for drawing my attention to Carstairs-McCarthy (2002).

(74a)   en-...-en

(74b)   e/in-...-ize

(74c)   in-...-ate

The circumfix in (74a) is subcategorized for adjectival bases and has been given extensive treatment in Gussmann (1987). The two remaining circumfixes appear to accept both nominal and adjectival bases. The following are examples:

(75a)   envenomize   (nominal base: *venom*)

        encarnalize   (adjectival base: *carnal*)

(75a)   invigorate   (nominal base: *vigour*)

        intoxicate   (adjectival base: *toxic*)

When viewed from a purely synchronic standpoint, very few formations can be found in present-day English such that they contain lexical categories simultaneously preceded by a prefix-like constituent and followed by a suffix-like element. To capture this class of synchronically stable circumfixed structures, one might propose the following definition of *circumfix*:

(76)   A *circumfix* is a discontinuous affix X ...Y such that XZY is a complete word formed by affixing X ...Y to some Z belonging to a specified category, and neither XZ nor ZY are words.

The question of circumfixational structures looks quite different from a diachronic point of view. When the origins of present-day circumfixed words are analysed, then, with the exception of those items which were borrowed as wholes (i.e., they were never derived in English), the words occurred at various stages in the history of English as bare (affixless) forms, prefixed structures, suffixed structures, and in the most complex form, that is, as prefixal-suffixal structures. Moreover, the competing forms did not occur in complementary distribution with respect to the various stages; that is, two or more competing forms could co-occur.

Consider the case of *encapsulate*.[11] In the mid-17th century two related forms were available: the verbal *capsulate(d)* (1646) and the nominal *capsule* (1652). The fact that one antedates the other by six years seems insignificant. To describe the morphological relationship between the two, one might argue that either the noun *capsule* derived from *capsulate* by backformation or that *capsulate* resulted from *-ate* suffixation. The noun *capsule* originally had the meaning 'a little case or receptacle'. In 1858 it acquired the meaning 'a metallic cap or cover for a bottle'. In 1859 the verbal conversion mate appeared, i.e. *to capsule*, with the sense 'to furnish or close (a bottle, etc.) with a capsule or metallic cover'. The affixed forms of the verbs

appeared in the 1870s: *encapsule* (1877) 'to enclose in a capsule', and *encapsulate* (1874) 'to enclose (as) in a capsule'.

Summing up, the various forms incorporating *capsule* can be related in the following fashion:

(77a)   capsule — capsulate

     (i) $\text{capsule}_N \xrightarrow{\textit{-ate} \text{ suffixation}} \text{capsulate}_V$

     (ii) $\text{capsule}_N \xleftarrow{\text{backformation}} \text{capsulate}_V$, or

(77b) $\text{capsule}_N \xrightarrow{\text{conversion}} \text{capsule}_V$

(77c) $\text{capsulate}_V \xrightarrow{\text{prefixation}} \text{encapsulate}_V$

(77d) $\text{capsule}_N \xrightarrow{\text{prefixation}} \text{encapsule}_V$

The data above include a deverbal verb (*encapsulate*) derived by means of *en*-prefixation. Other nests of related words encompass examples of deverbal verbs derived by means of suffixation. Consider the class of words based on the ultimate nominal base *venom*. The latter goes back to 1220. The verbal mate appeared a century later: *to venom* 'to injure by means of venom'. Almost simultaneously with venom_V, the denominal verb envenom_V came into use. Towards the end of the 16th century it gave rise to the deverbal suffixed form envenomize_V (1598). In 1905 the nominal *venomization* was formed although the OED does not record the verbal base venomize_V.[12]

It follows that in the history of English verbs could be derived from verbs by either prefixation or suffixation. The data thus warrant the following structures:

(78)

   a.   V   b.   V

      V^{af} V   V V^{af}
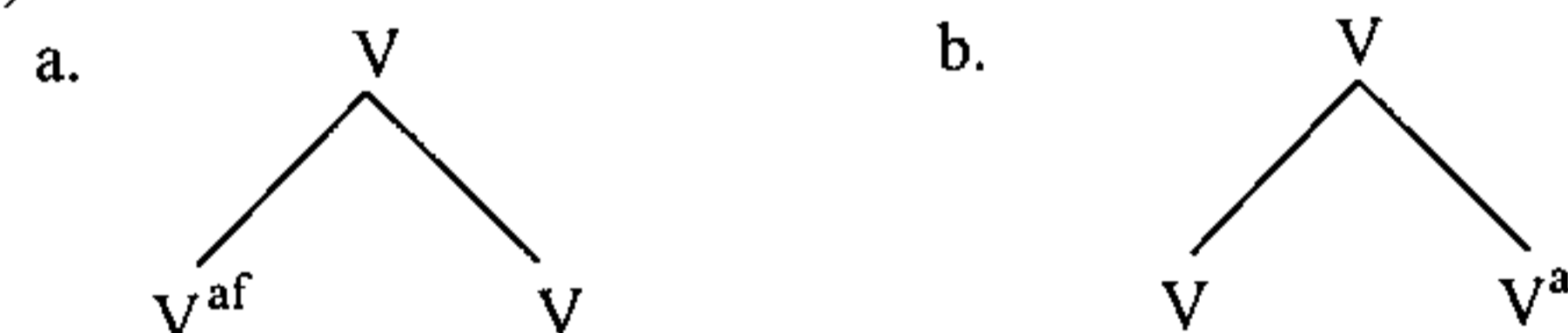
These structures obtain regardless of whether the base verb (i.e. the sister to V^{af}) is simple or complex.

---

[11]   If not indicated otherwise, the data are derived from the OED.

[12]   This account generates a problem here. The succession of events presented above suggests that the suffix *-ize* could exceptionally attach to verbs. I use the word *exceptionally* since such reliable sources as the OED and Marchand (1969) mention only adjectives and nouns as possible bases to which the suffix *-ize* could attach in the entire history of English.

Strauss (1982: 2) sets up a constraint which prohibits "*surface* occurrences of unembedded ... deverbal verbs" formed by suffixation.[13] In actual fact, his constraint rules out structures represented by the diagram in (78b). Strauss tries to derive support for his condition from the non-existence in English derivational morphology of what he calls "deverbal verb endings" and from the fact that English compound verbs may not contain a verb in preverb position. That is, structures like the following (Strauss's 1982: 3 in (4)):

(79)
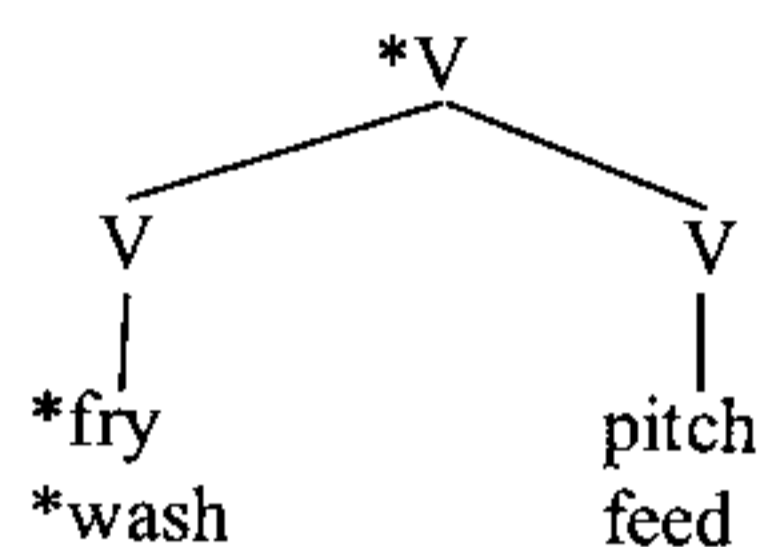
are ruled out.

Although the recorded data are not particularly abundant, evidence contravening Strauss's position can be found. With regard to the non-existence in English derivational morphology of deverbal verb endings, one might quote pairs of verbs like the following:

(80a) administer$_V$ — administrate$_V$
(80b) minister$_V$ — ministrate$_V$

The OED treats the forms in the right-hand column as by-forms of those in the left-hand column. The former have exactly the structure prohibited by Strauss's constraint in (79) above.[14]

In regard to compound verbs incorporating a verb as the left-hand sister, we might quote structures with bare verb complements to the verb *go*. The OED abounds with examples. One of them, *to go get*, is of special interest here because it has been subjected to derivational processes yielding *go-getter* (N), *go-getting* (A) and *go-gettingness* (N). Although the OED interprets *to go get* as 'to go and get',

that is, as a syntactic structure, a quotation from Galsworthy (1929), reproduced from the OED for the reader's convenience below:

(81) Froba: Heu! You are go-getters.
      Bryn: What is a go-getter?
      Froba: Kind of an early bird — go gets the worm.

indicates that *go get* can be analysed as a compound verb with the right-hand constituent functioning as head. The inflection marker *-s* appears on the head, as expected. The head of a word is determined by Di Schiullo and Williams's (1987: 26) theory of relativized heads which establishes headhood with respect to a feature. In the case of compound [VV]$_V$ verbs, the feature in question is the V on the mother node. Di Sciullo and Williams's definition of *head with respect to the feature F* (written "head$_F$") is given below:

(82) *Definition* of "head$_F$"
      The head$_F$ of a word is the rightmost element of the word marked for the feature F.

This definition selects the right-hand occurrence of V in [VV]$_V$ structures as head.[15]

Finally, a note on Old English past/passive participle formation is in order. Old English made use of the prefix *ge-* added to verbs. This Germanic prefix is still employed in modern German in the past/passive participle of verbs, both strong and weak. This gives the impression that the past/passive participles of, for instance, *machen* 'to make' and *sehen* 'to see':

(83a) machen   —   ge-mach-t
(83b) sehen   —   ge-seh-en

present circumfixed structures.

In contradistinction to modern German, in Old English the prefix *ge-* occurred with the past/passive participles as well as with the infinitives. It is true, though, that its presence was not obligatory and it dropped out more often in the infinitives than in the participles. Thus, the structure of Old English past/passive participles is prefixational-suffixational, not circumfixational.

---

[13] The paragraphs that fill up the rest of this section have been inspired by the PSiCL reviewer's suggestion that more attention might be given to the attractive problem of circumfixation. One interesting result of the present addition is the by-product concerning verbal compounds in English, namely the recognition that they may incorporate verbs in the left-hand position, resulting in structures of the [VV]$_V$ type.

[14] Marchand (1969: 256) talks of the adaptational and derivational uses of the suffix *-ate*. In the adaptational use the suffix attached in the history of English to verbs, including those terminating in *-ize*. Marchand quotes *stabilizate* as being derived as late as 1909.

---

[15] The question of verbal compounds incorporating verbs as the left sister still awaits investigation. Consider two further verbal structures: *make do* and *make believe*. The former only accepts inflexional markers which attach to the left-hand constituent: (*in*) *making do*, (*she*) *made do*. The latter attaches tense and aspect markers to the left-hand constituent (*solitude makes believe...*, *you could never be making believe*), but derivational morphemes to the right-hand constituent (*make-believer, a little make-believing girl*, *the make-believing makes it real*). The examples come from the OED.

The data presented above indicate that circumfixation has been alien to the spirit of the English language in its entire history. They support Carstairs-McCarthy's (2002) suggestion quoted in (73) that what are referred to as circumfixational structures might preferably be analysed as prefixal-suffixal combinations.

It is to be noted at this point that, by definition, the components of a circumfix remain at the same level of embedding, or, more technically, occur on the same cycle. On the other hand, prefixal-suffixal structures are such that either the prefix or the suffix is more deeply embedded. We have seen instances of both (see the discussion following point (76)).

4. Conclusions

We have examined infixation and circumfixation against the background of prefixational and suffixational processes in English.

It appears that English has never used bound morphemes as infixes. Even the *-n-* of *stand – stood* cannot be analysed as an infix. In the twentieth century the language began to use free forms (morphemes and a compound) and a single bound form (*-posi-*) as infixes. The free forms belong to specific syntactic categories and have a syntactic distribution, i.e., they can function as immediate constituents of phrasal categories. In addition to that, they may be inserted inside lexical constituents, i.e., function as sublexical elements dominated by the lexical categories N, A, and Adv.

The conditions on what came to be known as expletive infixation have been stated in terms provided by the theory of prosodic phonology, particularly one of its most recent versions, namely government phonology. Insertion loci for expletive infixes coincide with domain-internal foot boundaries. This is what distinguishes infixation from syntactic postpositional and prepositional structures.

As is well known, government phonology does not recognize the syllable as a prosodic constituent. This aspect of the theory constitutes no barrier to establishing the exact landing sites for expletive infixes. In certain cases it is always possible to define two points of weaker interconstituent contact which can harbour expletive infixes.

The issues of circumfixation have been outlined from the synchronic and the diachronic points of view. Word structures which linguists are prepared to regard as circumfixational turn out to be ordinary prefixal-suffixal formations, with the prefix and the suffix occurring at different levels of embedding, i.e. on different cycles.

In conclusion, both infixation and circumfixation of bound elements appear to be alien to the spirit of the English language. The process of infixation that began to operate in English in the twentieth century radically differs form all other affixational processes used in the language in that it employs non-affix constituents which, with the exception of *-posi-*, are free elements.

REFERENCES

Aronoff, M. 1976. *Word formation in generative grammar.* Cambridge, Mass.: The M.I.T. Press.
Bloch-Rozmej, A. 1994. "Geminates and interonset government in Irish". In Gussmann, E. and H. Kardela (eds.). 9-25.
Brame, M.K. (ed.). 1972. *Contributions to generative phonology.* Austin: University of Texas Press.
Carstairs-McCarthy, A. 2002. *An introduction to English morphology.* Edinburgh: Edinburgh University Press.
Chomsky, N. 1957. *Syntactic structures.* The Hague: Mouton.
Chomsky, N. 1964. "Current issues in linguistic theory". In Fodor, J.A. and J.J. Katz (eds.). 50-118.
Chomsky, N. 1965. *Aspects of the theory of syntax.* Cambridge, Mass.: The M.I.T. Press.
Chomsky, N. 1970. "Remarks on nominalization". In Jacobs, R. A. and P. S. Rosenbaum (eds.). 184-221.
Chomsky, N. 1981. *Lectures on government and binding.* Dordrecht: Foris Publications.
Chomsky, N. and M. Halle. 1968. *The sound pattern of English.* New York: Harper and Row.
Di Sciullo, A.-M. and E. Williams. 1987. *On the definition of word.* Cambridge, Mass.: The M. I. T. Press.
Fodor, J.A. and J.J. Katz (eds.). 1964. *The structure of language: Readings in the philosophy of language.* Englewood Cliffs, New Jersey: Prentice-Hall.
Gussmann, E. 1987. "The lexicon of English de-adjectival verbs". In Gussmann, E. (ed.). 79-101.
Gussmann, E. (ed.). 1987. *Rules and the lexicon: Studies in word-formation.* Lublin: Redakcja Wydawnictwa Katolickiego Uniwersytetu Lubelskiego.
Gussmann, E. 2002. *Phonology: Analysis and theory.* Cambridge: Cambridge University Press.
Gussmann, E. and H. Kardela (eds.). 1994. *Focus on language. Papers from the 2nd Conference of the Polish Association for the Study of English, Kazimierz 1993.* Lublin: Maria Curie-Skłodowska University Press.
Halle, M. 1973. "Prolegomena to a theory of word formation". *Linguistic Inquiry* 4. 3-16.
Halle, M. and J.-R. Vergnaud. 1980. "Three dimensional phonology". *Journal of Linguistic Research* 1. 83-105.
Harris, J. 1994. *English sound structure.* Oxford: Blackwell.
Hayes, B. 1984. "The phonology of rhythm in English". *Linguistic Inquiry* 8. 33-74.
Hayes, B. and S. Puppel. 1985. "On the rhythm rule in Polish". In Hulst, H. van der and N. Smith (eds.). 59-81.
Hendrick, R. 1980. *On the form and functioning of subcategorization.* Bloomington: Indiana University Linguistics Club.
Hulst, H. van der, and N. Smith (eds.). 1985. *Advances in nonlinear phonology.* Dordrecht: Foris Publications.
Jacobs, R.A. and P.S. Rosenbaum (eds.). 1970. *Readings in English transformational grammar.* Waltham, Mass.: Ginn and Company.
Larson, R. 1988. "On the double object construction". *Linguistic Inquiry* 19. 335-391.
Lieber, R. 1980. On the organization of the lexicon. Ph.D. dissertation, M.I.T. Distributed by the Indiana University Linguistics Club, Bloomington, 1981.
Lieber, R. 1992. *Deconstructing morphology: Word formation in syntactic theory.* Chicago: The University of Chicago Press.
Liberman, M.Y. 1975. The intonational system of English. Ph.D. dissertation, M.I.T. Distributed by the Indiana University Linguistics Club, Bloomington, 1978.

Liberman, M.Y. and A.S. Prince. 1977. "On stress and linguistic rhythm". *Linguistic Inquiry* 8. 249-336.

Marchand, H. 1969. *The categories and types of present-day English word-formation. A synchronic-diachronic approach.* 2nd ed. München: C.H. Beck'sche Verlagsbuchhandlung.

McCarthy, J.J. 1982. "Prosodic structure and expletive infixation". *Language* 58. 574-590.

McCawley, J.D. 1968. "Concerning the base component of a transformational grammar". *Foundations of Language* 4/3. 243-269.

Onions, C.T. (ed.). 1966. *The Oxford dictionary of English etymology.* Oxford: At the Clarendon Press.

The Oxford English dictionary. 1992. 2nd CD-ROM ed. Oxford: Oxford University Press.

Pollock, J.-Y. 1989. "Verb movement, universal grammar, and the structure of IP". *Linguistic Inquiry* 20. 365-424.

Reszkiewicz, A. 1973. *A diachronic grammar of Old English. Part 1: Phonology and inflections.* Warszawa: Państwowe Wydawnictwo Naukowe.

Roeper, T. and M.E.A. Siegel. 1978. "A lexical transformation for verbal compounds". *Linguistic Inquiry* 9. 199-260.

Ross, J.R. 1972. "A reanalysis of English word stress (Part I)". In Brame, M.K. (ed.). 229-323.

Rubach, J. 1984. "Segmental rules of English and cyclic phonology". *Language* 60. 21-54.

Ruszkiewicz, P. 1997. *Morphology in generative grammar: From morpheme-based grammar to lexical morphology and beyond. A study of selected models of morphological description.* Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.

Ruszkiewicz, P. 1998a. "On the diachrony-in-synchrony analysis in morphology". *Folia Linguistica Historica* 18. 81-117.

Ruszkiewicz, P. 1998b. "Towards a redundant-free theory of affixational morphology". In Szcześniak, K. and H. Wątróbska (eds.). 210-219.

Ruszkiewicz, P. 2001. *Distinctive feature theory: Origins, development, and current practice.* Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.

Selkirk, E.O. 1977. Untitled ms., University of Massachusetts, Amherst, Mass.

Selkirk, E.O. 1980. "The role of prosodic categories in English word stress". *Linguistic Inquiry* 11. 563-605.

Selkirk, E.O. 1982. *The syntax of words.* Cambridge, Mass.: The M.I.T. Press.

Siegel, D.C. 1971. "Some lexical transderivational constraints in English". Ms., M.I.T.

Siegel, D.C. 1974. Topics in English morphology. Ph.D. dissertation, M.I.T. Published in 1979. New York: Garland Publishing.

Strauss, S.L. 1982. *Lexicalist phonology of English and German.* Dordrecht: Foris Publications.

Szcześniak, K. and H. Wątróbska (eds.). 1998. *Tematy. Księga jubileuszowa w 70. rocznicę urodzin profesora Leszka Moszyńskiego. Slawistyka* 9. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.

Webster's third new international dictionary of the English language. 1976. Springfield, Mass.: G. & C. Merriam Company.

Williams, E. 1981. "On the notions 'lexically related' and 'head of a word'". *Linguistic Inquiry* 12. 245-274.