SECONDARY STRESS IN ENGLISH WORDS

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ABSTRACT

This dissertation examines what regulates secondary stress placement in English words. After discussing and criticising some influential stress theories, the framework presented in Burzio (1994) is modified. The modified framework is tested against a corpus of almost 1000 words with all their variants. The discussion is centered around the following problems: (i) factors influencing pre-tonic secondary stress placement, with special emphasis on prefixes and classical compound-initials (ii) the stressing of words ending in *-ative* (iii) the stressing of words ending in *-atory*. The analyses prove that Fudge (1984)'s classification of prefixes and compound-initials can successfully be incorporated into Burzio (1994)'s framework: these are assigned pre-determined structures. I find that stress preservation plays a major role in the placement of pre-tonic secondary stresses of affixed items. The hypothesis that initial heavy syllables attract stress is not confirmed. I propose that one heavy syllable may be left unparsed (and thus unstressed) at the beginning of words, though this is rarer than an initial unstressed light syllable. Based on the analysis of *-atory* words, I suggest that a new foot type, (HWW) should be included into the inventory of well-formed feet. This foot type is not discussed in Burzio (1994) and helps to analyse words that must be treated as exceptional in the lack of such a foot. At the end of the dissertation the list of all analysed items is provided.

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ABBREVIATIONS

AmE	American English
B94	Burzio (1994)
B96	Burzio (1996)
B99	Burzio (1999)
BrE	British English
CC1	Type 1 classical compound
CC2	Type 2 classical compound
CCI	classical compound-initial
CCF	classical compound-final
em	extrametrical
EM	Edge-marking (of H98)
ESR	English Stress Rule (of LP)
F84	Fudge (1984)
H98	Halle (1998)
HV	Halle—Vergnaud (1987)
LP	Liberman—Prince (1977)
MSR	Main Stress Rule
N77	Nanni (1977)
RR	Rhythm Rule
S84	Selkirk (1984)
SPE	Chomsky—Halle (1968)
SR	Strong Retraction
Wells	Wells (1990)

italics	example
italics$_{\text{Am}}$	example, AmE pronunciation
italics$_{\text{Br}}$	example, BrE pronunciation
C	consonant
$C_{\text{obstr.}}$	obstruent
$C_{\text{son.}}$	sonorant
H	heavy syllable
H_n	syllable ending in a $C_{\text{son.}}$ or *s*
L	light syllable
V	vowel
ø	a) null segment
	b) σ headed by a null segment
σ	a) unstressed syllable
	b) any kind of syllable
σ̀	secondary stressed σ
σ́	primary stressed σ
á	primary stressed vowel
à	secondary stressed vowel
a:	long vowel
a.go	syllable division
(Án.ne)	primary stressed foot
(ò.ry)	secondary stressed foot

CONTENTS

1. GENERAL INTRODUCTION

To learn the stressing of English words is rather stressful for people whose mother tongue is like Hungarian or Slovak: in these languages all words are stressed only on the first syllable, e.g. H. *építészet* /ˈeːpiːteːsɛt/, S. *stavitel'stvo* /ˈstavicelstvo/ 'architecture', H. *vakarózni* /ˈvɔkɔroːzni/, S. *škrabat'sa* /ˈʃkrabacsa/ 'to scratch oneself'. In English, however, at first sight stress can be anywhere in the word and the number of stressed syllables is not limited to one: in *clárity* the first syllable is stressed, in *penúltimate* the second one, in *còmbinátion* stress is on the first and the third syllable, in *misrèpresént* on the first, the second and the fourth etc. If we count from the end of the word, the situation is not any better: in *kàngaróo* the last and the antepenultimate syllables are stressed, in *comédic* the penultimate, in *clássificatory*$_{\mathrm{Br}}$ only the sixth syllable from the end. Furthermore, in English there is more than one level of stress, i.e. in *còmbinátion* -*ná*- is more prominent than -*còm*-, and both are more prominent than -*bi*-. Each word has one primary stressed syllable (marked by an acute accent here), may have one or more secondary stressed syllables as well (marked by a grave accent), and all the other syllables are unstressed (or zero stressed). In Hungarian, however, from a phonological point of view there are only two stress levels: stressed and unstressed—the first syllable is stressed, all the others are unstressed (Kálmán—Nádasdy, 1994: 409). A third difference between English and Hungarian (and also Slovak) is that while in English vowel length, reduction and stress are interconnected, i.e. in *penúltimate* /pəˈnʌltɪmət/ only the stressed syllable has a full vowel and the others are reduced, in *còmbinátion* /ˌkɒmbɪˈneiʃᵊn/ the long vowel appears in a stressed syllable, in Hungarian and Slovak both stressed and unstressed syllables always have full vowels and vowel length is also independent of stressing. These difficulties called my attention to the phenomenon of stress. This dissertation concentrates on one aspect of English stress, namely secondary stress (understood as non-primary, non-zero), and aims at discovering the principles regulating secondary stress placement. This is done by examining previous stress theories and analysing a corpus of almost 1000 words and all their variants along the lines of Burzio (1994), whose stress theory I shall modify as a result of my analyses.

Secondary stress is generally treated together with primary stress in theories of English stress, because the two are assigned by similar rules/principles. The rhythm of English is basically alternating, i.e. stressed syllables are separated by one or two unstressed syllables, and long sequences of unstressed syllables do not often occur, especially not at the beginning of words. Typical examples are *accèptabílity, Àpalàchicóla, àbracadábra, Higàshiosáka, pèntobárbitòne, rèconcíliatòry*$_{\mathrm{Am}}$. The most primitive stress-rule could assign stress to every second syllable and promote last stress to primary. However, as the previous six example words indicate, this rule would not give satisfactory results. Theories of stress recognise that the weight of syllables plays an important role in stress placement: heavy syllables, which have a branching rime VV, VVC, VC or VCC, tend to attract stress more than light ones, which end in a short vowel (i.e. V). Furthermore, the rightmost stress generally cannot be too far away from the end of the word, though there are occasional exceptions to this among multiply affixed items, such as *clássificatory*$_{\mathrm{Br}}$. Other important facts are that morphologically related words tend to have stress on the same syllables (Stress Preservation, e.g. *cóncentràte ~ còncentrátion*) and that certain suffixes influence the place of primary stress (e.g. *-ation* is always primary stressed on its first syllable). Usually these factors are incorporated into theories of stress, however these are still not enough to tell why the stress patterns **Apàlachicóla, *abràcadábra* do not exist.

I started the research by reading the relevant literature in a critical manner. My method was the following: I selected three words (*academician, dissimilarity, emanatory*), each of which had more than one possible stress pattern according to the Longman Pronunciation Dictionary (Wells: 1990). I tried to derive the stress patterns for these by each of the rule/constraint systems of major theories. I found that certain existing stress patterns cannot be derived by most systems. One such pattern is exemplified by words like *mìsrèpresént, ìmpàrisyllábic,* which have initial adjacent stresses, contrary to the general alternating pattern. Another general impression was that theories can generally derive only one stress pattern for a certain word, though in reality more than one pronunciation of that string is possible; one main source of variation being the movement of the place of secondary stress, e.g. *àcademícian ~ acàdemícian, pàrticipátory ~ partìcipátory ~ partícipatory ~ partícipatòry*$_{\text{Am}}$. My last general remark about some of the stress theories that I reviewed is that it seemed that the stress rules in them were developed on the basis of the analysis of some typical words, but not whole classes of words.

There are two accounts of stress which I found more successful than others: Fudge (1984) and Burzio (1994). The central theme of Fudge (1984) is the influence of affixation on the stressing of words. His analysis is based on the examination of a vast amount of data, contrarily to other accounts, and his work is a very thorough and rather precise description of these data, without providing a formal model for the stress-system of English. Burzio (1994) develops a constraint based theory which can decide whether a stress pattern is possible for a certain string. For some words his theory predicts that a certain string can only be stressed in one way, but normally more than one acceptable parsing is possible. The list of allowed patterns for a string generally contains one that is most preferred (the selection being done by a constraint hierarchy), meaning that most of the words with the syllable structure in question will follow that pattern. The adequacy of such a model is noted in Coleman (s.a.), who claims that his speech synthesis system scored best with a probabilistic grammar that computed all possible parses for a string and selected the most probable one out of these.

Burzio (1994) incorporates Fudge (1984)'s findings about the influence of suffixes into his account by claiming that the stressing properties of suffixes can be represented by a pre-determined foot-structure assigned to them. However, prefixes and classical compound initials are not discussed by him. As Fudge (1984) and Burzio (1994) seemed to account for most of the facts, I chose these two stress theories as the basis for my analysis.

I tried to fuse the merits of these two accounts and modify Burzio (1994)'s constraint system based on the analysis of a large corpus, in a similar manner to Fudge (1984), respecting most of the findings of both theories. One of the general aims of the dissertation is to check the correctness of Burzio (1994)'s inventory of possible foot types. Secondary stressed syllables may appear both before and after the primary stressed (tonic) syllable, as in *rèconcíliatòry*$_{\text{Am}}$. I

treated these two classes (i.e. pre-tonic and post-tonic secondary stress) separately. While post-tonic secondary stresses generally fall on a suffix (*-ory* in this case), pre-tonic secondary stress is either on a stem syllable (e.g. *acàdemícian, àbracadábra*) or on a prefix (e.g. *dìssimilá:tion*), or on a classical compound-initial (e.g. *pèriodóntal*). In general, Burzio (1994)'s system accounts for both types of secondary stress. However, the influence of morphemes attached to the beginning of the stem (i.e. the influence of prefixes and classical compound-initials) is not incorporated into his theory, while the impact of suffixation on stress-placement is a central issue in his book. Therefore, this dissertation is primarily concerned with pre-tonic secondary stresses. Post-tonic secondary stresses are also discussed, though not as thoroughly as pre-tonic stresses, because these are generally accounted for in Burzio (1994). I analysed only two suffixes that seem to be problematic for most theories, namely *-ative* and *-atory*.

I approached each problem from a theoretical point of view. First the treatment of the problem in previous accounts was looked at, then I proposed some modifications to Burzio (1994)'s account based on the findings of Fudge (1984) and my own data. I analysed all relevant words and all their variants found in Wells (1990) using the foot-typology and constraints of Burzio (1994). In some cases Fudge (1984)'s classification of morphemes was not adequate for my purposes, but I proposed only slight modifications. The following questions (1) are investigated in the dissertation.

(1) **Research questions**

(1a) **Pre-tonic secondary stress**

(i) Is Fudge (1984)'s classification of prefixes and classical compound-initials correct?

(ii) How can this classification be incorporated into Burzio (1994)'s system?

(iii) Does this incorporation improve the explanatory force of the theory?

(iv) Is Burzio (1994: 155)'s claim that initial syllables are either light and unstressed or heavy and stressed true?

(v) Is Burzio (1994, 1996)'s claim that Stress Preservation is the major factor beside Metrical Well-formedness in the stress placement of derived items true?

(1b) **Post-tonic secondary stress**

(i) Can post-tonic secondary stress appear in disyllabic words?

(ii) How can we account for these in Burzio (1994)'s system?

(iii) How can we account for the different stress patterns of *-ative* words (cf. *affírmative ~ génerative ~ invéstigàtive*)?

(iv) How can we account for the different stress patterns of *-atory* words (cf. *émanàtory ~ èmanátory ~ émanatory ~ émanatòry*$_{\text{Am}}$)?

(1c) **General**

(i) Is the inventory of possible feet (Burzio: 1994) correct?

(ii) Does Burzio (1994)'s constraint hierarchy account for the facts?

(iii) Does the behaviour of syllables closed by sonorants or *s* support Burzio (1994)'s claim that these syllables behave as light when unstressed, i.e. they may appear in the middle of a ternary foot?

After this Introduction, the dissertation has four major parts. Part I gives the theoretical background: the Literature review (Chapter 2) discusses the rules/constraints of six influential stress theories. Five of these operate with a rule-system, while Burzio (1994)'s account is based on constraints, and stress is shown on the orthographical form of the word by matched parentheses marking foot boundaries. Stress is represented by a labelled metrical tree and a grid in Liberman—Prince (1977). Selkirk (1984) only makes use of the grid. Halle—Vergnaud (1987) also represent stresses with the help of a metrical grid, but they also insert foot boundaries in the form of matched parentheses. Halle (1998) uses unmatched parentheses in the grid to mark foot boundaries. Fudge (1984) does not present a formal model of stress: his account is purely descriptive, it lists prefixes, compound-initials and suffixes, and the influence of each morpheme on stressing is described. Based on their behaviour, he arranges affixes into classes. The analysis of all the variants of the words *academician, dissimilarity, emanatory* (altogether 9 items) is attempted in each framework and the methods associated with each framework are described and criticised. The chapter is concluded by the comparison of the theories discussed, and Burzio (1994)'s account is found to account for the facts best.

Part II is dedicated to pre-tonic stresses. This part is divided into four chapters. Chapter 3 is the introduction to this part of the dissertation. Chapter 4 shows what factors may influence secondary stress placement, based on the theories reviewed in Chapter 2. Chapter 5 describes Fudge (1984)'s classification of prefixes and classical compound-initials and proposes pre-determined parsings for each of these classes in a similar manner to the treatment of suffixes in Burzio (1994). Chapter 6 summarises the outcome of the analysis of 737 words and all their variants that are primary stressed on their fourth syllable, i.e. ones that may have secondary stress on the first or on the second syllable. The words have been selected from Wells (1990) and are analysed in Burzio (1994)'s manner, but the pre-determined parsings for prefixes and compound-initials proposed in this dissertation are also applied.

Part III deals with post-tonic secondary stresses. After an introduction (Chapter 7), in Chapter 8 I briefly review how previous theories handles post-tonic secondary stresses. Burzio (1994)'s analysis of post-tonic secondary stress is discussed in detail, with special emphasis on the problem of disyllabic words with two stressed syllables, cf. *crèáte* vs. *chlóride*. Words ending in *-ative* are discussed in Chapter 9: first previous theories are looked at, then they are evaluated in the light of the analysis of 135 words and their variants. The ending *-atory* is treated in a similar manner in Chapter 10, with special emphasis on the variation displayed by words such as *émanàtory ~ èmanátory,* in which the place of primary and secondary stress is

interchanged. The analysis is based on a corpus of 95 words ending in *-atory*. Chapter 11 (Part IV) concludes the dissertation, summarising the major findings.

The full list of analysed items is given in the Appendices. Appendices 1–5 show the words primary stressed on their fourth syllable. These are arranged into groups according to the stress pattern they display. Appendix 6 gives the full list of miscellaneous words (mostly of phrasal origin) that have primary stress on their fourth syllable but fall out of the scope of the present study. These words are not analysed. Appendix 7 contains a list of words that have word-internal adjacent stresses. This list is not complete, only some typical examples are given. Appendices 8–10 are dedicated to *-ative* words: in Appendix 8 the stems of these words are given, Appendix 9 shows the full list of analysed *-ative* items, while Appendix 10 gives the list of those variants that cannot be derived by certain stress theories. The full list of analysed *-atory* words appears in Appendix 11.

PART I:
THE BACKGROUND

2. LITERATURE REVIEW

2.1 Introduction

This chapter reviews previous theories of English stress. Though the central theme of the dissertation is secondary stress, this issue cannot be separated from primary stress assignment, since the place of secondary stresses depends on the place of primary stress. This chapter will examine and criticise previous stress-theories, with emphasis on rules/constraints for the computation of secondary stresses. The sections below correspond to theories, i.e. the discussion below is author-centred rather than problem-centred. The reason for this is that stress-assigning algorithms are rather complicated and it is easier to show them once and highlight problems simultaneously than to concentrate on the problems and cite the relevant rules separately in each case. However, there are some specific points, which are of special interest to us, that will be examined within each theory. These are given in (1).

(1) **Main questions of the investigation**

(1a) Does the theory make correct predictions about secondary stress assignment?
(1b) Can it handle both pre-tonic and post-tonic secondary stresses?
(1c) Is it possible to derive more than one pattern for a certain word?
(1d) Are initial adjacent stresses accounted for?

These questions will be answered with the help of sample derivations. I will try to derive the stress patterns of the following words (2).

(2) **Sample words** that test

(2a) a differences in the place of pre-tonic secondary stress:
àcademícian ~ acàdemícian
(2b) adjacent word-initial non-primary non-zero stresses:
dìssimilárity ~ dissìmilárity ~ dìssìmilárity
(2c) differences in the place of main stress or in that of post-tonic secondary stress:
émanàtory ~ èmanátory ~ émanatory ~ émanatòry

The books/articles reviewed here include six of the most influential theories of English stress in the past 25 years. Most of these are rule-based accounts, beginning with Liberman—Prince (1977), who first treated stress as a relational concept and who used metrical trees and grids to represent stress levels. Three other accounts also make use of some form of the metrical grid (Selkirk: 1984, Halle—Vergnaud: 1987, Halle: 1998). Fudge (1984) concentrates on the influence of affixes in stress assignment and describes these effects in detail. The only non-rule-based theory described here is that of Burzio (1994, 1996, 1999). His work will be followed throughout the dissertation because his approach is found to be the most successful in the present chapter. These works are discussed in the order of their publication.

2.2 Liberman—Prince (1977)

Phonologists agree that the stressed–unstressed distinction is not enough to represent stresses in English properly. At least three levels of stress (primary, secondary, zero) are recognised. In Chomsky—Halle (1968)(SPE) the number of stress-levels is, in theory, unlimited[1]: when the stress rules promote the stress of a vowel, all other stresses have to be reduced by one. At the word level the Stress Adjustment Rule (SPE: 84) weakens all non-primary stresses by one, hence the lack of a level 2 stress in (3a). As a result, the stress-levels assigned to the vowels of a certain word depend on the length of the word (3a). In the case of phrases, the composition of the phrase also influences the stress-levels of the words inside it. In the two compounds of (3b) the inner compound *law-degree* seems to have different stress patterns (1–4 vs. 2–3).This creates the false impression that the numerically expressed stress levels are absolute degrees, i.e. that in the first compound *law* is much more prominent than *degree*, than in the second compound.

(3) **Stress levels in SPE** (based on SPE: 117, LP: 254)

(3a) *instrumental ~ instrumentality*

3 1 3 - 4 1 -
in stru ment] al] in stru ment] al] i+ty]

(3b) *law-degree requirement changes ~ law-degree language requirement*

1 4 3 2 2 3 1 3
[[[law-degree] requirement] changes] [[law-degree] [language requirement]]

The first scholars who treated stress as a relational concept were Liberman and Prince (1977)(=LP). They claim that stress is a binary relation (strong–weak) defined on a pair of syllables, which means that one of the two syllables is stronger than the other one. This way the problem of multiple stress levels is solved: these relations are always defined on a pair of syllables or groups of syllables with the help of a new device, the labelled metrical tree. Therefore, a certain word will almost always have the same representation, i.e. the prominence relations are preserved under embedding. This is illustrated by (4), where *law-degree* always has the same substructure *s-w*, no matter whether it is dominated by *s* or *w.* This analysis is much closer to reality than the one in (3b), where the same sequence is assigned stress levels 1–4 and 2–3 in the two phrases.

[1] LP (p. 251) write: "This theory [i.e. SPE's] employs an *n*-ary segmental stress feature [...], which is in principle capable of assuming indefinitely many values. Its range is usually limited to five values [...] more or less as a matter of convenience."

(4) **The metrical tree of LP** (LP: 257–258)

R R
s w s
s
s w w w s w s w
[[[law-degree] requirement] changes] [[law-degree] [language requirement]]

There are cases, however, where prominences are not preserved under embedding, e.g. *thirtéen* and *mén* vs. *thìrteen mén.* In these phrases, if the original stress pattern of the words were preserved, there would be adjacent stresses (clashes) in the phrase (i.e. *thirtéen mén*). This configuration is dispreferred in English, which has alternating rhythm. As a result, the final stress of the first element (*thirtéen*) is moved leftwards to ensure the alternation (*thìrteen mén*). LP use the metrical grid to represent this phenomenon, and stress-clashes (adjacent grid marks on a certain level) show the possible places for the reversal to take place. The Rhythm Rule (Iambic Reversal) (LP: 319) handles these cases: it changes the configuration *w s* into *s w* if the node that was originally *s* does not correspond to the strongest element of the phrase and if the originally *w* element has the feature [+stress]. The problem is not discussed further here, because Iambic Reversal is only relevant for items larger than a word, thus falling outside of the scope of the present discussion.

Let us examine the stress-assigning algorithm of LP in more detail. LP operate with rules: the English Stress Rule (ESR)(6) works in a cyclic fashion on the underlying representation of words, which contains segmental information (i.e. the quality and quantity of segments). The words are also underlyingly marked for a certain type of retraction, i.e. how far the stressed syllables will be from each other. There are other lexical marks as well: French endings (i.e. endings that attract stress), for example, are marked [+F] (cf. LP: 305 and (10) below). Furthermore, certain elements are marked as "hidden" for the ESR (e.g. word-final *-y,* which "functions as a kind of 'extrametrical' syllable" cf. LP: 293, who follow SPE: 132–145). The phenomenon of extrametricality was further developed in Hayes (1982) and has been an important device for stress-theorists ever since.

The ESR assigns the feature [+stress] to a certain vowel and after each cycle a partial metrical tree is built over those syllables that have passed through the ESR. The tree-building algorithm does not see the segmental make-up of the word, it only operates on a sequence of [+stress] and [-stress] syllables (actually, the ESR works on a sequence of segments, but these are arranged into syllables). A condition (LP: 290) ensures that no ill-formed representations (e.g. a *strong* node that dominates a [-stress] vowel) can be created in the course of derivation. Due to this condition metrically strong syllables cannot be reduced. Before the re-application of the ESR and its concomitant tree-building (i.e. before the next cycle), (5) erases the partial tree generated in the previous cycle, but the vowels marked [+stress] do not lose this property.

(5) **Deforestation** (LP: 301)

Before applying any rules on a cycle, erase all prosodic structure in the domain of that cycle.

The ESR (6) goes through the word, starting from the end of the constituent, and promotes a vowel in each cycle.

(6) **English Stress Rule (ESR), Cyclic Version** (LP: 301)

$$V \rightarrow [+\text{stress}] \;/\; \underline{\quad}\; C_0 \; (\underset{\begin{bmatrix}-\text{long}\\-\text{stress}\end{bmatrix}}{V} \; (C))_a \quad (\underset{[\langle -\text{long}\rangle_d]}{V} \; C_0)_b \quad (\underset{[+\text{stress}]}{V} \quad X)_{c\ \alpha}]$$

Conditions: $\sim c \supset d$; α = N, A, V

~a, ~b under certain morphological and lexical circumstances:

~a = Strong Retractor, ~b = Weak Retractor, neither: Long Retractor

The diacritics in the ESR (6) correspond to the three retraction classes (LP: 274–278). LP claim that all words are marked in the lexicon for a certain type of retraction (Weak, Strong, or Long)(LP: 274–278). This marking shows how far a stressed syllable will be from an already stressed one, i.e. what kind of syllables are unstressed between the two stresses. Retraction does not play a role in the place of the rightmost [+stress] mark, but influences the place of all those preceding this. Weak Retractors maximally have one light syllable here, e.g. words ending in *-oid: pyrámidòid, ellípsòid* (cf. pre-stressed 1/2 suffixes of Fudge (1984)). Strong Retractors, on the other hand, have exactly one syllable between stresses, e.g. words ending in *-ate: manípulàte, cóncentràte* (cf. pre-stressed 2 suffixes of F84). Long Retraction means that there are two or three syllables between the two stresses (maximally VC$\sigma\sigma$), e.g. words ending in *-atory*$_{\text{Am}}$*: hallúcinatòry, accúsatòry*. This retraction is similar to the Weak mode and corresponds to F84's pre-stressed 2/3 class. It might happen that a word "migrates", i.e. it behaves as if it belonged to a retraction class not typical of the ending, e.g. *óxigenàte*. This means that certain endings are not as typical as others, depending on the number of migrating words. In F84 these endings are called mixed, i.e. following more than one pattern. Monomorphemic words are assigned to the retraction classes idiosyncratically, in a similar manner to "migrants", e.g. *Schehérezáde* is a Strong Retractor. It seems that LP do not consider the possibility of a certain word having more than one pattern—once belonging to a certain retraction class, at other times belonging to another. After this short digression on retraction, the principles that govern the tree-building (7–8) after a certain vowel is assigned [+stress] by the ESR are discussed.

(8) **Tree building** (LP: 265–267)

If a vowel is *s*, then it is [+stress].

Every sequence of syllables +-, +--, +--- etc. forms a binary-branching and left-branching metrical tree.

Start at the end of the word and work leftwards, stopping at each [+stress] to build up as much of the tree as possible.

(8) **Metrical bracketing** (LP: 281)

a) **Domain Provision** Assign metrical structure to all syllables in domain of application.

b) **Alternation Provision** Adjoin any unstructured material from previous iteration.

c) **Linkage Provision** Adjoin any metrical structure provided by (a), (b) to structure created by previous iteration. Adjoin result of final iteration.

The tree is a binary branching tree and its nodes are labelled *strong* or *weak,* as illustrated in (9). The label *strong* means 'stronger than its sister', while *weak* means 'weaker than its sister', irrespective of whether the nodes in question are terminal (i.e. s_1, w_2, s_3, w_4 below) or dominate partial trees (as w_5 and s_6). The primary stressed syllable (called the Designated Terminal Element) is the one that is only dominated by *strong* nodes in the full tree (*-na-* in our example). Secondary stressed vowels are those ones that have a *strong* node as their corresponding terminal node in the tree, but this *strong* node is dominated by a *weak* one somewhere in the tree (*ex-* here). Those syllables that are [+stress] and are labelled *weak* do not carry stress in LP's understanding. I shall come back to this last remark later.

(9) **A labelled tree (before Destressing)** (based on LP: 288)

w_5 s_6

s_1 w_2 s_3 w_4

ex pla na tion

\+ + + -

The nodes of the tree are labelled *strong* or *weak* by LCPR (10), which follows the tree-building procedure. This rule is rather complicated and here we are only concerned with a part of it (namely I.A. and II.).

(10) **Lexical Category Prominence Rule (LCPR)** (LP: 308)

In the configuration $[N_1\ N_2\ _\alpha]$

I. N_2 is *strong* if any of the following conditions is met:

A. N_2 branches

B. N_2/[+F]

C. N_1/#C_0 V and not (N_2/affix)
[-long]

D. α = non-nominal or [+R],

(i) N_1 does not branch, and not (N_2/*-ate, -ize*)

(ii) α = verb and N_2/stem.

II. Otherwise, N_2 is *weak*.

[+F] (French endings such as *-ier, -ette*) and [+R] (nouns clinging to the verbal pattern (i.e. finally stressed), e.g. *accórd*) are lexical marks

The most important part of this rule is that in a pair of sister nodes the rightmost one is labelled *strong* if it branches (I.A.). As a result of this, on the lowest level of the tree the terminal nodes will be labelled *sw* rather than *ws*, because a terminal node cannot branch. This labelling mechanism has important consequences regarding adjacent stresses. While the ESR (6) can generate a sequence of [+stress] [+stress], adjacent stresses will never appear on the surface in this system. This is illustrated in (11) below. If two [+stress] vowels appear word-finally (11a), the second one will be labelled *weak* by the LCPR (as it is non-branching), and thus will not carry secondary stress. It must be noted that a word-final [+stress] vowel will never be stressed due to the same reason (e.g. *héterodox*). If adjacent [+stress] marks appear word-internally (11b), the one to the right will be the member of a branching foot, because the tree-building algorithm creates the largest tree possible every time it meets a [+stress] mark. $[+stress]_1$ is incorporated into the tree later. If it is adjoined to the foot to its right, it will be *weak,* because the right node (which dominates $[+stress]_2$) is branching. The simplest tree that illustrates this is given in (11b), but more complicated trees are also possible, if there are more syllables after $[+stress]_2$. If $[+stress]_1$ is built into a foot to its left, it will again be *weak,* because as a right node it does not branch (as in (11a)).

(11) **LP's tree over adjacent [+stress] vowels**

(11a) word-finally	(11b) word-internally
...$[+stress]_1$ $[+stress]_2$#	...$[+stress]_1$ $[+stress]_2$ [-stress] ...#
s w	w s w
	s

Any syllables that are unaccounted for by the previous rules are adjoined to the tree by SSA (12). Only those syllables will be subject to SSA that are 'extrametrical', i.e. not seen by the ESR, e.g. the suffix *-y,* because all other syllables will be incorporated by the tree-building algorithm.

(12) **Stray Syllable Adjunction (SSA)** (LP: 294)

Any syllable unaccounted for by the ESR and its concomitant tree-building is to be adjoined as a weak sister to the nearest maximal left foot (cf. 13)), respecting word boundaries.

(13) **Left Foot** (LP: 294)

Any uniformly left-branching tree that has *s* as its leftmost node is a *left foot.* (All trees whose terminals read *s w w ...*)

Let us see how these work on a non-derived word, *academy*, which is the stem of our first example word. It seems that here the word-final *-y* is seen by the ESR (because it is not a suffix here), otherwise the word would have the pattern **ácademy*, as the ESR would skip the two CV syllables *-cade-.* The derivation is given in (14). The first syllable that is assigned

[+stress] is the third one from the right. As there is only one syllable left, the ESR will assign [+stress] to the first vowel as well. Tree-building starts from the right, and a left-branching tree is built over the string +--. Since the first syllable cannot pair up with another syllable, it is adjoined as a weak sister to the tree built above *-cademy* by Linkage Provision (8c). The LCPR (10) will label the nodes of the tree: *-ca-* will carry the primary stress, because it is only dominated by *strong* nodes (in the structure *-cademy -cade-* is stronger than *-my,* because *-my* is non-branching, and *-cademy* is stronger than *a-* because it is branching).

(14) *acádemy*

	(14a)			(14b)
	a ca de my	→		a ca de my
ESR	+ + - -		EDR	- + - -
LCPR	w s w w			w s w w
	s			s
	s			s

The first syllable of the word needs to be destressed. This is done by the English Destressing Rule (15) which is "the rule of morphophonemic vowel reduction" (LP: 298). The EDR works after the word has been scanned by the ESR and the whole tree has been built (i.e. it is a non-cyclic rule, though LP do not use this label). This rule turns the [+stress] feature of a vowel into [-stress], and also shortens long vowels. Destressing occurs initially (e.g. *políce*), medially (e.g. *èxplanátion*) and also in prefixes attaching with a = boundary (e.g. *inténse*). In the word *acádemy* EDR applies to the first vowel. The length of the vowel is not altered since it is underlyingly short. The final representation of *acádemy* is given in (14b).

(15) **English Destressing Rule (EDR)** (LP: 290)

$$\begin{bmatrix} \mathrm{V} \\ \langle +\mathrm{long}\rangle_a \end{bmatrix} \rightarrow \begin{bmatrix} -\mathrm{stress} \\ -\mathrm{long} \end{bmatrix} \quad / \ \# <X\ V>_b\ C_0 \_\_\_ <C_0 =>_c (C)\ V$$

Condition: $a \supset (b \vee c)$

If the word is longer, there will be more than one stressed syllable. Let us see this process with the word *academician,* which is our first test word. Since this word has two variants, we will see whether LP are capable of deriving two patterns for one word (16). The derivation below starts after the first cycle, which is actually identical to (14a). At the beginning of a new cycle the tree is erased, only [±stress] features are kept (Deforestation (5)). The ESR can turn an originally [-stress] vowel into [+stress], but [+stress] can only be turned into [-stress] by the EDR.

The variation in the place of secondary stress can only be derived if the word in one case is marked for Long Retraction (16b)(*àcademícian,* two unstressed syllables between the two stresses), and in the other it is either a Strong or a Weak Retractor (16c)(*acàdemícian,* one syllable between the two stresses). As mentioned above, this multiple marking is not allowed in

LP: one word belongs to one retraction class. Therefore, multiple patterns would call for the extension of the theory. In the word *academician* the ending *-ian* must be analysed as disyllabic (cf. F84: 73, *-ian* is composed of an insert *-i-* + *-an*), because only this way can primary stress fall on *-mi-*.

(16) *àcademícian ~ acàdemícian*

```
Cycle 2                                   Cycle 3
(16a) àcadémic                            (16b) àcademícian
a  ca  de  mic                            a  ca  de  mic  i  an
+   +  -   -     Deforestation            +  +  +   -               Deforestation
       +   -     ESR                                +  -  -         ESR
       s   w                                        s  w  w

+   +  +   -     ESR (vacuous)            +  +  +   +  -  -         ESR (vacuous)
s   w  s   w                              s  w  w   s  w  w         Long Retraction
  w      s       LCPR                       s         s             LCPR
                                               w         s

                                          +  -  -   +  -  -         EDR
                                          s  w  w   s  w  w
                                            s         s
                                               w         s

                                          (16c) acàdemícian
                                          a  ca  de  mic  i  an
                                          +  +  +   +  -  -         ESR
                                          w  s  w   s  w  w         Weak/Strong Retract.
                                               s      s             LCPR
                                             w           s

                                          -  +  -   +  -  -         EDR
                                          w  s  w   s  w  w
                                               s      s
                                             w           s
```

Let us see the derivation for *dissimilarity* now, which is a word that may have adjacent initial stresses. The first two variants are similar to *acàdemícian ~ àcademícian*, the variation can only be derived if the word is marked for two types of retraction (17a, b). The vowel of the first or the second syllable undergoes destressing.

(17) *dìssimilárity ~ dissìmilárity ~ dìssìmilárity*

```
Cycle 1                          Cycle 2
símilar                          dissímilar
si  mi  lar                      dis  si  mi  lar
 +  -   -      ESR                    +   -   -     Deforestation
 s  w   w      LCPR              +    +   -   -     ESR
  s                              w    s   w   w     LCPR
                                        s
                                           s

Cycle 3
(17a) dissìmilárity                            (17b) dìssimilárity
dis si mi lar  i  ty
 +   +  -  -                Deforestation
           +   -  -         ESR
           s   w  w         LCPR
            s

+  +  -  +  -  -            ESR                +   +  -  +  -  -     ESR
   s  w  s  w  w            Strong Retraction  s   w  w  s  w  w     Long Retr.
     w    s                 LCPR                 s       s           LCPR
             s                                      w       s

+   +  -  +  -  -           ESR (vacuous)      +   -  -  +  -  -     EDR
w   s  w  s  w  w           LCPR               s   w  w  s  w  w
      w   s                                      s       s
              s                                     w       s
          s

-   +  -  +  -  -           EDR
w   s  w  s  w  w
      w   s
              s
          s
```

(17c) *dìssìmilárity*

??

\+ + - + - -

s s w s w w

w s

w s

As for the third variant, the one with adjacent initial stresses (17c), the derivation should be similar to (17a), because this is the variant whose second syllable is stressed. Since the first two syllables must bear stress, these both should be *strong,* as in the hypothetical structure in (17c). However, the tree is always built from right to left, and it is always the maximal tree that should be constructed, i.e. the node of the first syllable cannot be the sister of the node dominating *-simi-*. This means that the pattern *dìssìmilárity* cannot be derived by this system.

Post-tonic secondary stresses are even more problematic for LP. Secondary stress is represented by a *strong* node which is dominated by a *weak* node somewhere (primary stress is only dominated by *strong* nodes). A certain vowel can only be *strong* in relation to another vowel, i.e. if it has a *weak* pair. This configuration, however, will always be marked *strong* by the LCPR (10), since it constitutes a branching node. As a result, the vowel marked *s* will get the primary stress. The only means by which a post-tonic vowel can be secondary stressed is a special Foot Formation rule (18). This rule converts a sequence of *w* nodes into two feet out of which the first one is stronger, i.e. post-tonic secondary stress is generated. Since this is the last rule we shall refer to and that is given by LP, now we can give the order of these rules, which is crucial. The order of rules for words is as follows (cf. LP: 302): ESR (6) + Tree-building (8–8) → SSA (12) → FF(18) → EDR (15).

(18) **Foot Formation (FF)** (LP: 296)

N N

s_1 ⇒ s_2 w

s_2

w w w w s w

Selkirk (1984: 171–172) points out the deficiency of non-representing certain secondary stresses in LP. She illustrates this by the word pair *Ténnessèe—Pámela,* which have identical tree representations (19). The difference in their pronunciation is only marked by the [+stress] feature of the final vowel of *Tennessee,* while *Pamela* has an unstressed final vowel. This means that a [+stress] syllable labelled *weak* should also be regarded as secondary stress, but LP do not recognise this "hidden" secondary stress assignment in their own system. It must be mentioned, however, that according to Burzio (1994) the fact that a vowel is full/long (which is

marked by [+stress] in LP) is not necessarily an indication of stress (cf. *própagà:te* vs. *álibi:*), i.e. [+stress] dominated by a *weak* node should not be automatically translated into secondary stress.

(19) **"Hidden" secondary stress in LP** (based on S84: 171)

Ténnessèe vs. *Pámela*

Tennessee Pa me la

\+ - + ESR + - - ESR

s w w LCPR s w wLCPR

s s

Before deriving *emanatory,* it is useful to look at LP's derivations, who do derive *-atory* words, namely *artículatòry, compénsatòry* (pp. 298–302), given in (20) and (21) respectively. The main reason for repeating these derivations here is that I think they contradict LP's own principles. The *-y* of *-ory* is extrametrical here and is only attached to the representation by Stray Syllable Adjunction (12) after all the cycles of ESR and tree-building.

(20) *artículatòry* (LP: 296–297)

(20a) (20b)

ar tic u la to ry → ar tic u la to ry

ESR + + - - + (-) SSA + + - - + -

LCPR w s w w w w s w w w w

s s

s s

s s

s

(20c)

→ ar tic u la to ry

FF + + - - + -[2]

w s w w s w

s w

s

s

In (20) the main problem is that for some reason the [+stress] quality of the vowel in *-la-,* which is assigned to it in Cycle 1 (*artícula:te*) is not present, though it is given in *cómpensa:te* (21a). This deficiency is not mentioned by LP in the text, they only say the ESR in the second cycle stresses *-or-,* then *-tic-* because of Long Retraction (leaving two syllables between the stresses), and the first syllable. However, a [+stress] feature assigned in any cycle can only be turned into [-stress] by EDR, which is the last rule, following both SSA and FF. Keeping the [+stress] here would cause problems, because then a foot would be constructed over *-atory-*. This would block the application of FF. An interesting fact is that LP demonstrate the work of FF on this derivation—which, in the light of their own principles—is ill-formed.

The derivation of *compénsatòry* in (21) is even more interesting, because here LP give a step-by-step derivation. This is not without problems either. Cycle 1 is straightforward, and Deforestation keeps the stresses for Cycle 2. Then the ESR stresses *-pens-* because of Long Retraction: only one syllable is skipped because *-pens-* is CVCC and Long Retraction allows the skipping of a $C_0\breve{V}(C)$ + another syllable. The [+stress] on *-ate-* is kept (21b). The problem is that the tree built over this sequence is not labelled *wsw,* as e.g. in *dispensary* (22), but *sww*. This contradicts the tree-building algorithm (cf. (8) above), which says that from right to left, stopping at each [+stress], as much of the tree should be built as possible. Only this irregular tree can produce an input for FF in (21c), which needs a sequence of minimally three consecutive *w* nodes (the last one is due to SSA, which joins the last, extrametrical syllable to the existing tree).

(21) *compénsatòry* (LP: 302–303)

(21a) **Cycle 1**

```
com  pens  ate
+       -   +       ESR
s       w   w       LCPR
   s
```

(21b) **Cycle 2**

```
com  pens  ate  or  y
+      -    +            Deforestation
+      +    +   +  (-)   ESR (Long Retraction)
       s    w   w        LCPR
         s

          ↓

com  pens  ate  or  y
+      +    +   +  (-)   ESR (Long Retraction)
w      s    w   w        LCPR
         s
           s
```

(21c) **"Post-cycle"**

```
com  pens  ate  or  y
+     +     +   +   -    SSA
w     s     w   w   w
        s
          s
              s

          ↓

com  pens  ate  or  y
+     +     +   +   -    FF
w     s     w   s   w
        s       w
          s

com  pens  ate  or  y
-     +     -   +   -    EDR
w     s     w   s   w
        s       w
          s
```

[2] In LP (p. 297) the designated terminal element of this tree, *-tic-*, is labelled [-stress], which is obviously a misprint.

(22) *dispensary* (LP: 295)

```
dis pens ar  y
w    s    w
      s
```

The derivations in (20) and (21) both contradict LP's own principles, therefore I consider their output ill-formed. In (23) below our third example word, *emanatory,* is derived, without the ill-formed structures of LP discussed above. These derivations show that Foot Formation (18) cannot handle all cases of post-tonic secondary stresses. The main reason is that the input of FF (*...www*) does not arise, due to the preserved [+stress] of the stem.

LP (p. 295) say that *-atory* words are Long Retractors, i.e. ESR will skip a sequence of a syllable headed by a short vowel and another syllable to the left of the first [+stress] mark. First it stresses *-or-,* due to the long vowel. Then it skips *-ate-,* which is [+stress] because of Cycle 1, and *-man-* is skipped as well, due to Long Retraction. The rightmost foot is created over *-ator-,* which will be labelled *strong* by the LCPR, because it branches. The other foot, *eman-* is thus *weak.* SSA adjoins the extrametrical syllable and EDR destresses *-or-.* This means that LP's system derives *èmanátory* without problems, because there is no post-tonic secondary stress. All other patterns are problematic, because post-tonic secondary stresses can only arise (due to Foot Formation) if the configuration *swww* appears. If [+stress] features of the preceding cycle are kept, this pattern does not emerge at all. It seems that *émanàtory* could be derived with the help of Iambic Reversal, which turns *ws* into *sw,* but this rule works at the phrase level. Since *emanatory* is probably used attributively in most cases, we could argue that the variant *émanàtory* is a lexicalised result of Iambic Reversal (23c). If [+stress] of the first cycle is preserved, the patterns *émanatory* ~ *émanatòry* cannot be derived.

(23) *èmanátory ~ émanàtory*

(23a) **Cycle 1**

émanàte

e	man	ate	
+	-	+	ESR
s	w	w	LCPR
s			

(23b) **Cycle 2, "Post-cycle"**

èmanátory

e	man	ate	or	y	
+	-	+			Deforestation
+	-	+	+	(-)	ESR (Long Retraction)
s	w	s	w		LCPR
w		s			

e	man	ate	or	y	
+	-	+	+	-	SSA
s	w	s	w	w	
w		s			
			s		

e	man	ate	or	y	
+	-	+	-	-	EDR
s	w	s	w	w	
w		s			
			s		

(23c) **Phrase level**

émanàtory

e	man	ate	or	y	
+	-	+	-	-	
s	w	s	w	w	
s		s			Iambic Reversal
		w			

If we violate LP's principles and delete the [+stress] feature during Deforestation (actually following LP, cf. (20)) and treat the word as a monomorphemic item, the remaining two patterns *émanatory ~ émanatòry* may be derived (24). In (24a–b) the ESR stresses two vowels *-or-* and *e-*. Since the *-y* is extrametrical, there will be only one foot headed by the first syllable of the word. If FF is not applied, EDR destresses *-or-* and we get *émanatory* (24a). In (24b) SSA is followed by FF, building a weak foot over *-ory,* which yields the American pronunciation *émanatòry*. In this case EDR has nothing to destress.

(24) *émanatory ~ émanatòry*

Cycle 2, "Post-cycle"

(24a) *émanatory*

e	man	ate	or	y	
+	-	-	+	(-)	ESR (Long Retraction)
s	w	w	w		LCPR
s					
		s			

e	man	ate	or	y	
+	-	-	+	-	SSA
s	w	w	w	w	
s					
		s			
			s		

e	man	ate	or	y	
+	-	-	-	-	EDR
s	w	w	w	w	
s					
	s				
			s		

(24b) *émanatòry*

+	-	-	+	-	FF
s	w	w	s	w	
s			w		
		s			

To sum up, LP's system is capable of deriving one pattern for one word. This is partly due to the fact that ESR assigns one sequence of [±stress] marks to a certain word. This sequence can be translated into a tree representation, which shows prominence relations, in only one way. Multiple patterns would only be possible, as far as pre-tonic secondary stresses are concerned, if one word was allowed to belong to more than one retraction class. This would enable ESR to assign more than one [±stress] sequence to a word. Post-tonic secondary stresses can be derived in a very limited environment, namely if the configuration *swww* appears. We have shown that if we respect LP's principles (which LP themselves do not), this sequence does not arise in *-atory* words, owing to the stress on *-at-* inherited from the first cycle. Therefore, Foot Formation (FF) is not an adequate device for handling all post-tonic secondary stresses.

2.3 Selkirk (1984)

Contrary to LP's system Selkirk (1984)(=S84) represents stresses only with the help of the metrical grid, in which each syllable has a corresponding column of prominence marks (x). The higher the column, the more prominent the syllable is pronounced. Similarly to LP, rules work in a cyclic fashion and some elements are not seen by certain rules, i.e. they are extrametrical (root-final consonants, noun-final syllables, suffixes (S84: 92, 94)). The rules rely on the following types of information: syntactic labels (these determine the boundaries of cyclic domains), extrametricality (stored in the lexicon), syllable weight, position of syllables. For the sake of simplicity, (25) lists some key words and their definitions that will appear throughout the discussion that follows.

(25) **Definitions of S84**

(25a) **demibeat** = x on the 1st line of the grid

(25b) **basic beat** = x on the 2nd line of the grid

(25c) **strong beat** = an x, which has a corresponding x on the next higher level

(25d) **weak beat** = an x, which has no corresponding x on the next higher level

At the beginning of the derivation every syllable (i.e. stress-bearing unit) is given a demibeat by Demibeat Alignment (DA) (S84: 57). The first syllable of the root is also aligned with a basic beat, irrespective of its weight, by the Initial Basic Beat Rule (IBR) (S84: 84). Non-extrametrical heavy syllables are aligned with a basic beat by the Heavy Syllable Basic Beat Rule (HBR) (S84: 84). Up to this point the rules reflected that heavy syllables are usually aligned with stresses and that the initial syllable tends to be strong. If there are no heavy syllables in a word, only the first syllable will have a second level beat at this point.

Beat Addition (26) promotes every second syllable working from right to left. This rule reflects the tendency that in English stressed and unstressed syllables follow each other without clashes (two stressed syllables next to each other) and lapses (two unstressed syllables next to each other).

(26) **Beat Addition (BA)** (S84: 87)

```
             x
x   x   →    x   x
```

applies right-to-left; sensitive to Extrametricality on the 2nd level

Now the second level of the grid is completed. The MSR (27) selects the most prominent syllable of the domain, i.e. assigns primary stress (an x on the 3rd metrical level) to the rightmost strong syllable of the root.

(27) **Main Stress Rule (MSR)** (S84: 104)

$$\begin{array}{ccc} & & x_j \\ & & : \\ & & : \\ {}_{Root}[\ldots x_i]_{Root} & \rightarrow & {}_{Root}[\ldots x_i]_{Root} \end{array}$$

Conditions: (i) x_i is a second level beat

(ii) $x_i \neq x_j$

Sensitive to Extrametricality

BA (26) can apply on the 3rd metrical level and higher as well, but the syllable selected by the MSR must keep its prominence, i.e. if BA promotes a syllable to the 3rd level, the primary stressed syllable will be promoted to the 4th. This is ensured by the condition of Textual Prominence Preservation (TPPC)(S84: 104)).

To yield an alternating pattern, Beat Movement (28) may move an x to the left in the environment defined below. Additionally, the Alternation Maintenance Condition (29) guarantees that the already existing alternating pattern should not be broken by destressing. It says that a basic beat cannot be deleted if its deletion results in a lapse.

(28) **Beat Movement (BM)** (S84: 168)

```
          x                  x
     x    x           x      x
x    x    x    →      x   x  x
```

works on the 3rd level and higher

(29) **Alternation Maintenance Condition (AMC)** (S84: 121)

```
x
x    x    →    *x   x
σ    σ          σ   σ
```

It is worth noting that in this rule system only HBR is sensitive to the weight of syllables. Other rules mechanically operate on x's, with the exception of Sonorant Destressing (S84: 127), which only applies if in a sequence of three syllables the medial one is closed by a sonorant. The rules described up to this point are repeated in the next cycle.

After the completion of the cyclic stratum, some non-cyclic rules may apply out of which only the relevant ones will be discussed, namely Destressing and Minimisation. Destressing (30) deletes an x over an open syllable or over a closed one optionally. The conditions under which closed syllables may be destressed are not elaborated on by S84. She only says that syllables closed by a sonorant are more likely to be destressed than syllables closed by an obstruent.

(30) **Monosyllabic Destressing** (S84: 120)

```
x
x    →    x
σi        σi
```

Conditions:

a) If σ_i = CV, then obligatory.

b) If σ_i = CV $\begin{bmatrix}+\text{cons}\\+\text{son}\end{bmatrix}$, then optionally and ”often”.

c) If σ_i = CV $\begin{bmatrix}+\text{cons}\\-\text{son}\end{bmatrix}$, then optionally and ”seldom”.

Minimisation reduces the grid to the minimum size that correctly preserves the stress relations of the full-fledged grid. Minimisation is not formalised or explained in detail by S84. Selkirk says (p. 107) “Probably some extension of the minimality convention imposed by the TPPC will then minimize the derived grid”. This procedure seems to be a device to make grids easier to read and it should not produce an input to any grid transformation.

Rules work in cycles: first the full grid for the innermost constituent is built, then the affix is attached and rules reapply to the whole representation (cf. for example the derivation of *subliminality* in S84: 134). This means that previous grid marks are kept, which is a form of stress-preservation. Let us derive our example words now. The derivation of the first example word is given in (32).[3] In the first cycle the last syllable of the noun *academy* is extrametrical. In the second cycle it is only *-c* and not the whole suffix *-ic* that should be extrametrical—probably, because the *-i-* before it comes from two sources: *academy* + *-ic.* Otherwise, stress could not fall on *-de-*. When *-ian* is attached, extrametricality should apply to the last syllable of the ending so that Beat Addition would not see it.

The result of the first cycle enters the second cycle, where due to Beat Addition *-de-* gets a basic beat. This beat, being the rightmost one, is promoted by the MSR to bear primary stress. In order to preserve previous prominence relations, *-de-* will have four x’s, while *-ca-* will have three. Since these syllables are adjacent, there is a stress clash on the third level, indicated by dots in the representation. The clash is resolved by Beat Movement, which moves the third level beat of *-ca-* to the first syllable. This representation is built on in the third cycle, where *-mi-* will become the primary stressed syllable, and the arising stress clash on the fourth level is resolved by Beat Movement to the first syllable again. At the end of the cyclic stratum the first four syllables of the word bear some degree of stress (i.e. there are at least two x's over each of them). Superfluous stresses are deleted by Monosyllabic Destressing, which can only delete basic beats, i.e. it is only the second syllable that may be destressed. There is one more means to get rid of grid marks, namely Minimisation. It applies after Destressing but it cannot

[3] In the derivations that follow I will use an exclamation mark (!) to indicate a step that is not allowed by S84. A question mark signals steps that are questionable, e.g. steps that produce a dispreferred pattern.

destress *-de-,* because that would change prominence relations. If Destressing were allowed to reapply on the minimised grid, now it could delete this offending x, but as it is not a cyclic rule, it cannot apply again.

(32) *àcademícian*

Cycle 1

```
                                                  MSR        x
IBR, HBR   x                                      BA     x   x
DBA        x   x    x    x                               x   x    x    x
→          a   ca   de   <my> ]   c]ian]    →            a   ca   de   <my> ]   c]ian]
```

Cycle 2

```
                                             MSR              x
Resyll.        x                                        x ... x
BA         x   x    x                                   x   x    x
           x   x    x    x                              x   x    x    x
→          a   ca   de   mi<c>]   ian]    →             a   ca   de   mic]   ian]
```

```
                x
BM     x        x
       x   x    x
       x   x    x    x
→      a   ca   de   mic]   ian]
```

Cycle 3

```
                                              MSR                      x
Resyll.             x                                          x ...   x
BA         x        x                                  x       x       x
DBA        x   x    x    x                             x   x   x       x
→          x   x    x    x    x    x                   x   x   x       x    x    x
           a   ca   de   mi   ci   <an>]    →          a   ca  de      mi   ci   an
```

```
                     x
BM     x             x
       x        x    x
       x   x    x    x
       x   x    x    x    x    x
→      a   ca   de   mi   ci   an
```

Non-cyclic

```
                                x
Minimisation   x                x
Destressing    x          x     x
               x    x     x     x    x    x
→              a    ca    de    mi   ci   an
```

We must mention that lapses in the root domain are prohibited by the Anti-Lapse Filter (31). This filter, however, is considered to be cyclic and not surface true (S84: 117), i.e. this filter makes Beat Addition obligatory, but non-cyclic rules may produce lapses.

(31) **Anti-Lapse Filter** (S84: 109)

Within the domain of root, there may be no lapses.

The variant *acàdemícian* (32) is even more problematic, because it does not have stress where *àcadémic* does, i.e. on the first syllable. This pattern can only be arrived at if the word is treated as a non-derived item, i.e. if grid-marks of previous cycles are not respected. This is contrary to the assumptions of S84. The pattern *acàdemícian* does preserve stress: it preserves the stress of *acádemy,* not that of *àcadémic.*

(32) *acàdemícian*—underivable

! No preservation

							BA blocked by						
MSR				x			Montana Filter,				x		
IBR, BA	x	x		x			Init. Destressing		x		x		
DBA	x	x	x	x	x	x		x	x	x	x	x	x
→	a	ca	de	mi	ci	<an>]	→	a	ca	de	mi	ci	<an>]

In this derivation Beat Addition is blocked by the Montana Filter (33). This filter says that the configuration in (33) is dispreferred: Beat Movement can never produce this pattern and Beat Addition rarely does.

(33) **Montana Filter** (S84: 103)

?	x		
	x	x	
	x	x	x
	σ	σ	σ

Now let us turn to more complicated cases (35). The first pattern, *dìssimilárity,* (35a) is similar to (32) in that it can only be derived if previous stresses are not preserved. The IBR places a basic beat on the first syllable and Beat Addition stresses *-si-* and *-la-,* because *-ty* is extrametrical. The *-la-* is promoted to the third level by the MSR. The only task is to get rid of the basic beat on *-si-.* This can be done by the Abracadabra Rule (34) or Destressing, both will create the same pattern. The next variant, *dissìmilárity,* causes no problems to S84 (35b).

(34) **Abracadabra Rule** (S84: 117)

x	x		x	
x	x	→	x	x
σ	CV		σ	CV

(35) *dìssimilárity ~ dissìmilárity*

(35a) *dìssimilárity*

! No preservation

MSR				x							x		
IBR, BA	x	x		x			Abracadabra	x			x		
DBA	x	x	x	x	x	x	or Destress.	x	x	x	x	x	x
→	dis	si	mi	la	ri	<ty>	→	dis	si	mi	la	ri	<ty>

(35b) *dissìmilárity*

Cycle 1							**Cycle 2**						
MSR		x					MSR (vac.)		x				
IBR		x					IBR	x	x				
DBA		x	x	x			DBA	x	x	x	x		
→	[dis	[si	mi	<lar>]]	i	ty]	→	[dis	si	mi	<lar>]	i	ty]

Cycle 3							**Non-cyclic**						
				x			BM blocked by Montana;						
MSR		x		x			Destressing optional,				x		
BA	x	x		x			"seldom";		x		x		
DBA	x	x	x	x	x	x	Minimisation	x	x	x	x	x	x
→	dis	si	mi	la	ri	<ty>	→	dis	si	mi	la	ri	ty

The case of adjacent initial stresses is more intricate. S84 differentiates four levels of stress, which I mark differently from her: primary (*á*), secondary (*à*), tertiary (*â*) and zero (*a*).[4] She analyses a word which displays similar behaviour, *Ticonderoga.* This word is said to have two variants: *Ticônderóga ~ Tîcònderóga,* the first of which is the same as the pattern given for *dìssîmilárity* in Wells (1990). For our purposes tertiary and secondary stresses are both treated as secondary in further analyses, here, however, following S84, we keep the distinction.

S84 says that the word will have two representations, given in (36). In (36a) a dispreferred representation appears (cf. Montana Filter (33)), which is produced by Beat Addition. In (36b) BA does not apply, thus the first two syllables have equal number of x's. S84 claims that in this latter case the difference in stress level (tertiary, secondary) is merely phonetic.

[4] S84 generally marks three levels of stress: primary (*á*), secondary (*à*), zero (*a*). If, however, there is a tertiary stressed syllable in the word, the markings are different: primary (*á*), secondary (*â*), tertiary (*à*), zero (*a*), i.e. a grave accent here marks tertiary stress, (e.g. *chîmpànzée* (S84: 84), *rêconciliátion* (S84: 104), *Pôpocàtapétl* (S84: 114)). I always mark secondary stresses with a grave accent and tertiary stresses with a circumflex.

(36) *Tìcônderóga* ~ *Tîcònderóga* (based on S84)

(36a)			x		(36b)				
x			x					x	
x	x		x		x	x		x	
x	x	x	x	x	x	x	x	x	x
Tì	côn	de	ró	ga	Tî	còn	de	ró	ga

The option of having these two patterns, however, is only open to monomorphemic words according to S84 (cf. Hayes 1984). Kiparsky (1979) claims that derived words should only follow one pattern—which is clearly not the case in the light of Wells' (1990) data. Therefore, we propose the analysis in (37), which is parallel to (36a).

(37) *dìssìmilárity*

Cycle 3				x							x		
MSR				x			BA	x			x		
BA	x	x		x				x	x		x		
DBA	x	x	x	x	x	x		x	x	x	x	x	x
→	dis	si	mi	la	ri	<ty>	→	dis	si	mi	la	ri	ty

Post-tonic secondary stresses are not without problems either, as the variants of *emanatory* (38) show. The ending *-ory* often bears secondary stress in American English, but if not suffixed further, it is never main stressed[5] irrespective of the heavy suffix-initial syllable. In order to avoid primary stress on the ending, the whole suffix must be extrametrical, though normally only the last syllable of a suffix should be invisible to certain rules (cf. S84, Wenszky, 1996: 23). Furthermore, the heavy syllable (*-o-*) is optionally destressed by Monosyllabic Destressing (30), though in reality the ending is always destressed immediately after main stress. The variant in (38a) has a destressed suffix, so Destressing is at work here.

Post-tonic secondary stress poses problems in (38b), because a rightmost basic beat can escape promotion to the third metrical level (and thus getting the primary stress), only if it is extrametrical at the time of the application of the MSR. In this word, however, in Cycle 2 it is the ending that is invisible to the MSR. More than one constituent cannot be extrametrical at a certain level and an x placed by the MSR cannot be moved or deleted by later rules. This means that the pattern *émanàtory* cannot be derived by S84, because the MSR will always stress *-na-*. The same is true for the variant *émanatory* (38c). Beside problems with primary stress (same as in the previous case), here we find four unstressed syllables, i.e. a lapse. The fourth variant *émanatòry* (38d), causes similar problems. Even if we try to forget about stress-preservation, main stress would fall on the second syllable rather than on the first one, i.e. this pattern cannot be derived either by S84.

[5] Kürti Anna called my attention to examples like *òbligatórily*, where primary stress is on the ending *-ory*, if followed by a "stress-neutral" suffix. These are discussed in B94 (pp. 230–244).

(38) *émanàtory* ~ *èmanátory* ~ *émanatory* ~ *émanatòry*

(38a) *èmanátory*

Cycle 1					**Cycle 2**				
					MSR			x	
MSR	x					x		x	
HBR, IBR	x		x		HBR	x		x	x
DBA	x	x	x		DBA	x	x	x	x
→	e	ma	<nate>]	ory]	→	e	ma	na	<tory>

Non-cyclic				
Minimisation				
Destressing			x	
	x		x	
	x	x	x	x
→	e	ma	na	tory

(38b) *émanàtory*—underivable

Cycle 1					**Cycle 2**				
					MSR, *!BM		*←	x	
MSR	x					x		x	
HBR, IBR	x		x		HBR	x		x	x
DBA	x	x	x		DBA	x	x	x	x
→	e	ma	<nate>]	ory]	→	e	ma	na	<tory>

(38c) *émanatory*—underivable

(38d) *émanatòry*—underivable

!*No preservation

MSR		x		
HBR, IBR, BA	x	x		x
DBA	x	x	x	x
→	e	ma	na	<tory>

In sum, though S84 has some optional rules, it seems her system is not satisfactory, especially in the case of post-tonic secondary stresses. If we do not take into account stress preservation, some patterns can be derived. Those patterns are the most problematic that have the main stress at the beginning of the word rather than at the end, because the MSR always stresses the rightmost basic beat. A further problem is posed by words in which there are two unstressed syllables between two stressed ones, which is a rarer pattern than alternation, but it still exists. It seems in some cases these lapses cannot be produced with S84's rule machinery.

2.4 Fudge (1984)

Though the stress-rules of Fudge (1984)(F84) are not so widely known, I consider it important to discuss them here briefly. The reason is that F84 concentrates on the role of prefixes, compound-initials and suffixes in stress-placement, and this issue will play a central role in my analyses of words in the following two parts of the dissertation.

A central concept of F84 is the stressable portion (SP) of a word, which is that part of a word that remains after removing the inflectional suffixes and a number of derivational affixes (e.g. *-ness, un-*). Opposed to other theories, the stress rules do not look at the syntactic category of the word they work on. There is one exception, though: those noun–verb pairs that have different stress patterns. The prefixes in certain pairs belong to different prefix categories (F84: 166–167), e.g. *con-* is stress-repellent in verbs: *contést* but it is not stress-repellent in nouns: *cóntest* (cf. Chapter 5 for a detailed account on prefix categories). Those pairs that are not prefixed are listed by F84 (p. 32), because here he regards stress-shift to be idiosyncratic.

The basic stress rules (F84: 29–30) work on the SP of the word. In disyllabic words the stress is generally on the penult. If the word is longer than two syllables, the place of primary stress depends on the weight (or using F84's terms: the "strength") of the final and the penultimate syllables (41). In the case of final syllables the final consonant is extrametrical. All finally stressed words (such as *cajóle, còurtesán*) are regarded as exceptions.

(41) **Basic stress rule** for SP that is trisyllabic or longer (F84: 29)

(i) if the final syllable is heavy, primary stress is on the antepenult of the SP

(ii) if the final syllable is light

(a) and the penult is heavy, the penult is primary stressed

(b) otherwise primary stress is on the antepenult

As for pre-tonic secondary stress, the following rules are given (42), with the proviso that certain prefixes may disturb this pattern. (42i–ii) record the general tendency of English against clashes (though these are tolerated initially in reality). (42iii) is the reflex of LP's Long Retraction (cf. the discussion of LP's ESR (6) above), i.e. the words that follow Strong or Weak Retraction and have at least three syllables before main stress are all exceptions. This deficiency is "repaired" by F84 in a way that some (complex) endings, such as *-ation,* may influence secondary stress placement. For example, F84 (p. 61) says that in *-ation* (= *-ate* + *-ion*) words primary stress is on the ending (assigned by *-ion*) and secondary stress is two syllables away (assigned by *-ate*), yielding *appròximátion,* rather than **àpproximátion*. It must be noted that counterexamples to F84's rules can be found (see the parenthesised examples of (42)), but Fudge does not think these rules are without exceptions.

(42) **Pre-tonic secondary stress rules** (F84: 31)

(i) if #σσ́, there is no secondary stress (↔ *Chìnése*)

(ii) if #σσσ́, then #σ̀σσ́ (↔ *elèctrícity*)

(iii) if #(σ...)σσσσ́, then

(a) if #(σ...)σHσσ́, then #(σ...)σσ̀σσ́ (↔ *chàracterístic*)

(b) if #(σ...)σLσσ́, then #(σ...)σ̀σσσ́ (↔ *acàdemícian*)

No rules are given for post-tonic secondary stress (disregarding compounds now), though F84's examples do contain this kind of secondary stress (e.g. *cónfidànt* (F84: 57)). F84's most important findings are connected to derived words. He classifies prefixes and suffixes according to their influence on stress, based on the analysis of thousands of words. His classification, the summary of which is given below, was followed by Burzio (1994) and is the basis of classification of affixes in this dissertation as well. The affix classes will be discussed in detail later (see Chapter 5), therefore (43) contains only the names of categories, the most important characteristics and an example.

(43) **Affix types** (based on (F84: 40–49, 138–192))

Class	**Subclass**	**Influence on stress**	**Example**	
Prefixes	**Stress-neutral**	no main stress	*un-*	*ùnnátural*
	Stress-repellent	main stress if placed by suffix	*con-*	*connéct*
Compound-initials	**Compound 1**	no main stress	*pseudo-*	*pseùdo-scìentífic*
	Compound 2	accepts main stress	*pseudo-*	*pseúdonỳm*
Mixed	one form follows more than one pattern (prefix ~ compound-initial, compound 1 ~ compound 2, stress-neutral ~ stress-repellent)		*dis-*	*dìsagrée, díssident*
Suffixes	**Stress-neutral**	no influence	*-ed*	*suggésted*
	Autostressed	attracts main stress	*-ade*	*lèmonáde*
	Pre-stressed 1	main stress on the immediately preceding syllable	*-ic*	*scìentífic*
	Pre-stressed 2	main stress 2 syllables away	*-ate*	*cóncentràte*
	Pre-stressed 1/2	main stress on the immediately preceding H syllable, otherwise 2 syllables away	*-ence*	*ìnterférence dífference*
	Pre-stressed 2/3	main stress on the H syllable that is the 2nd from the ending, otherwise 3 syllables away	*-scope*	*astígmoscòpe síderoscòpe*

Let us judge F84's work based on the criteria we are using for others. At first sight it seems the secondary stress rules are not satisfactory: there is no method to find the place of post-tonic secondary stress and the rules in (42) are unable to derive adjacent stresses. Prefixes and compound-initials, however, can influence secondary stress placement.

It seems that the prediction that syllable weight counts in secondary stress placement (42iii) is not always true—especially in the case of derived words, where the stem stresses are likely to be preserved. This is illustrated by our first example word, *academician* (44). Here primary stress is placed by the suffix *-an* two syllables away, because the insert *-i-* constitutes a light syllable. Since the primary stressed syllable is preceded by three light syllables, secondary stress falls two syllables away from the stressed syllable, which gives out the pattern *àcademícian.* As a result, *acàdemícian* cannot be derived.

(44) *àcademícian ~ acàdemícian*

1. primary stress: *-ian* = insert *-i-* + *-an* (pre-stressed 1/2) ⇒ σ́*ian* = *academícian*
2. secondary stress: *a.ca.de.mícian* = LLL*mícian* (42iiib) ⇒ *àcademícian*
3. *acàdemícian* cannot be derived

Primary stress is again correctly placed in *dissimilarity,* but there are problems with the secondary stress. The prefix *dis-* is stress-neutral when the stem is a free form. These prefixes are not part of the SP of the word, thus cannot be primary stressed. Secondary stress is assigned to them by the regular stress rules (42). These can only generate one pattern for a certain sequence of H and L syllables, i.e. only one of the three attested patterns of *dissimilarity* can be derived by the rules (45). While in this case the adjacent initial stresses could not be derived, there are words in which it is possible for F84 to produce a pattern σ̀σ̀σ ..., e.g. in the case of the prefix *mis-,* which always bears secondary stress, e.g. *mìsùnderstánd.*

(45) *dìssimilárity ~ dissìmilárity ~ dìssìmilárity*

1. primary stress: *-ity* pre-stressed 1 ⇒ σ́*ity* = *dissimilárity*
2. secondary stress: *dis.si.mi.lárity* = HLL*lárity* (42iiib) ⇒ *dìssimilárity*
3. the patterns *dissìmilárity ~ dìssìmilárity* cannot be derived

As already noted, F84 has no explicit rules for post-tonic secondary stresses, though some endings are given with secondary stress or a long vowel in his list. An example is the complex ending *-atory* (=*-ate*+*-ory*), for which F84 predicts four different patterns (46). Generally, the ending *-ory* is stress-neutral because the stem is a free form, i.e. the ending is not part of the SP of the word (46a–c). However, in some words the ending itself gets the primary stress, reflecting the pre-stressed 1/2 nature of *-ory* (46d).[6]

[6] The ending *-ory* is stress-neutral when the stem is a free form (e.g. *prómise* → *prómissory*), and is pre-stressed 1/2 in all other cases (e.g. *òlfáctory, expósitory*)(F84: 93–94).

(46) **The behaviour of *-atory*** (based on F84: 63)

(46a) pronounced /-əˌtɔːri/ in AmE

(46b) sometimes pronounced /eɪtərɪ/ in BrE

(46c) sometimes pronounced /ətᵊrɪ/ in BrE

(46d) sometimes pronounced /ˈeɪtərɪ/ in BrE

(47) shows the derivation of *emanatory,* whose all four variants are predicted by F84.

(47) *émanàtory ~ èmanátory ~ émanatory ~ émanatòry*

1. secondary stress on *-atory, -ate* pre-stressed 2 ⇒ *émanàtory* (46b)
2. primary stress on *-atory, -ate* pre-stressed 2 ⇒ *èmanátory* (46d)
3. *-ory* is long in AmE, *-ory* stress-neutral (stem: *émanàte*) ⇒ *émanatòry* (46a)
4. ending reduces, *-ate* pre-stressed 2 ⇒ *émanatory* (46c)

In sum, while F84 is probably the best resource book about the behaviour of English affixes, the general stress rules in F84 cannot account for multiple patterns. However, the characterisation of certain endings may contain some hints or explicit declarations about how the stress pattern of items with the suffix in question may vary. The same is true for adjacent stresses: these can only be derived for certain prefixes. The rules of secondary stresses seem to record tendencies but cannot account for variability.

2.5 Halle—Vergnaud (1987)

The next rule-based account to be examined is that of Halle—Vergnaud (1987)(HV). HV represent stresses with the help of a metrical grid, similarly to S84, but in their theory the grid is bracketed, i.e. foot boundaries are marked by matched parentheses. The metrical grid is built by a quite complicated rule-system. The derivation is cyclic, each syntactic domain is a cyclic domain. Each cycle builds a grid on a separate autosegmental plane (48).

(48) **Autosegmental plane** (HV: 5)

> Each autosegmental line above the central line of phonemes defines with the latter an autonomous autosegmental plane [...], which is distinct from the planes defined by other autosegmental lines but intersects with them in the central line of phonemes.

There is a rule, namely Stress Copy (49), the first rule in the non-cyclic stratum, which copies stresses from previous cycles to the plane on which the grid is being built, i.e. the information on different metrical planes is joined. Thus the grid of a derived item will contain the stresses of its stem, which is a form of stress preservation. This, however, is not so strict as in the case of S84, who built the grid of a derived item on top of the grid of the stem (cf. the derivations (32), (35b) and (38a) above).

(49) **Stress Copy** (HV: 247)

> Place a line 1 asterisk over an element that has stress on any metrical plane.

Syllable extrametricality is relevant at the right edge of nouns and some suffixed words, for syllables headed by a short vowel. The stress rules may refer to the weight and the position (initial) of syllables. Words may be exceptions to rules, e.g. Extrametricality (e.g. *Berlín*)(HV: 236). Certain endings (e.g. *-oid, -ory*) constitute separate stress domains, i.e. *molluscoid* is cut up into two domains: mollusc | oid (HV: 256). Certain words come out of the lexicon with a grid mark on level 1 on a certain syllable—these are words whose pattern could not be derived with the stress rules (e.g. *Mìssissíppi*)(HV: 231–232).

The derivation proceeds as follows. The first step is to mark the stress-bearing units by an asterisk on the bottom line (line 0) of the grid. On the first line of the grid the Accent Rule (50) marks heavy syllables.

(50) **Accent Rule** (HV: 231)

> Assign a line 1 asterisk to a syllable with a branching rime with the proviso that the word-final consonant is not counted in the determination of rime branchingness in the case of the final syllable of underived verbs and adjectives.

Most of the following rules work only on the grid and do not make reference to the segmental makeup of syllables. The most important of these grid-building rules is the Main Stress Rule (51). This constructs left-headed, maximally binary feet on line 0, i.e. feet on the lowest level are either monosyllabic or disyllabic. The head of each constituent has a

corresponding asterisk on line 1 (either as the result of (50) or created by the MSR itself (51c)). The rightmost asterisk on line 1 is given a corresponding asterisk on line 2, and all other line 1 grid-marks are erased by conflation.

(51) **Main Stress Rule (MSR)** (HV: 228)

> a) Line 0 parameter settings are [+HT, +BND, left, right to left].
> b) Construct constituent boundaries on line 0.
> c) Locate the heads of line 0 constituents on line 1.
> d) Line 1 parameter settings are [+HT, -BND, right].
> e) Construct constituent boundaries on line 1.
> f) Locate the head of the line 1 constituent on line 2.
> g) Conflate lines 1 and 2.

After the application of the MSR there is one more cyclic rule, namely Shortening, but it does not interest us for the time-being. In the non-cyclic stratum extrametricality is not relevant, i.e. formerly extrametrical syllables are incorporated into the grid. The first rule of the non-cyclic stratum is Stress Copy (49), which is followed by the first three lines of MSR, called the Alternator. The Alternator creates non-primary stresses and builds extrametrical syllables into the grid. This is done exhaustively, which means all syllables are arranged into feet and foot boundaries constructed by the cyclic MSR may be rearranged, but foot-heads are respected. This process is illustrated in (52), which is part of the derivation given in (57a) below. The input to Alternator is the result of the cyclic stratum plus the asterisks copied by Stress Copy from other metrical planes. The following changes are induced by the Alternator:

(i) the formerly extrametrical *-ty* is assigned a line 0 asterisk;
(ii) *-ity* forms a binary foot, its head is *-i-,* which is assigned a line 1 *, while the right boundary of the original foot over *-lari-* is retracted, creating a monosyllabic foot for *-lar-* which bears the primary stress of the word;
(iii) *-simi-* form a left-headed binary foot;
(iv) *dis-* forms a unary foot.

(52) **The work of the Alternator (after Stress Copy)**

			*							*		
(*	*	.	*)				(*	*	.	*)	*	
*	*	*	(*	*)	.	Alt.	(*)	(*	*)	(*)	(*	*)
dis	si	mi	lar	i	<ty>	→	dis	si	mi	lar	i	ty

The Non-cyclic MSR creates one right-headed unbounded foot on line 2, thus ensuring the prominence of the syllable selected by the MSR. There are a number of other rules, out of which I will only cite the relevant ones which are needed for the derivation of our example words.

The most controversial rule of HV is Stress Enhancement (53), which promotes either the first or the second syllable of a word if neither has a line 2 asterisk. No cues are given when to choose the first or the second syllable. The asterisk introduced by this rule "induces" a right-headed constituent under itself on line 1 (HV: 243), as shown by (55a–b) below. As a result of this, line 2 asterisks will always be the heads of corresponding line 1 feet, which is probably a criterion for a well-formed grid.

(53) **Stress Enhancement** (HV: 242)

```
                    *                   L2
      *      →      * / [(SYL) ___      L1
```

This rule will prove very useful in the derivation of *àcademícian ~ acàdemícian,* but may also lead to false results. In the derivations below the first grid contains the level 0 grid marks that are assigned to each stress-bearer. If the derivation of the two variants is exactly alike up to some point, the identical part is not repeated.

Since *academician* is a noun and its last syllable contains a short vowel, Extrametricality is relevant here. HV (p. 243) give one step of the derivation of *academician* (54), which shows the grid before the application of Stress Enhancement. Here *-ian* counts as one syllable, and it is extrametrical as a whole. There are no arguments given for why *-ian* is regarded as one syllable. In this case the primary stress can only fall on *-mi-* if this syllable is associated with a L1 grid mark in the lexicon, i.e. the word is an exception.

(54) *academician* (HV: 243)

```
                  *
(.    .     .     *)
(*    *     .     *)    .
(*)   (*    *)    (*    *)
a     ca    de    mi    cian
```

The derivation in (55) is different: it shows that if *-ian* is two syllables, the word can be treated as regular. Only the last syllable, *-an-*, is extrametrical. Since the remaining stem does not contain heavy syllables, the Accent Rule cannot promote any syllable. The MSR promotes *a-, -ca-* and *-mi-,* out of which the last one is promoted to line 2*.* At the beginning of the non-cyclic stratum Stress Copy copies all stresses on previous planes to line 1 (from *acádemy, àcadémic*), i.e. above the first three syllables. Then the Alternator (which is identical to MSR a–c, but is not sensitive to extrametricality) builds feet again on the bottom line. The Non-cyclic MSR promotes *-mi-* to the third level, which operation only adds an extra level to the grid but does not influence prominence relations. If at this point Stress Enhancement promotes the first syllable, we get *àcademícian*, if it promotes the second syllable, we get *acàdemícian.*

(55) *àcademícian ~ acàdemícian*

(55a) *àcademícian*

Cyclic stratum

```
                                                      MSR
Accent                                                a–c    *     *           *
Extram.   *     *     *     *     *     .                    (*)   (*    *)    (*    *)    .
→         a     ca    de    mi    ci    <an>          →      a     ca    de    mi    ci    <an>


MSR                         *                         MSR                      *
d–f       (*    *           *)                        g      (.    .     .     *)
          (*)   (*    *)    (*    *)    .                    *     *     *     (*    *)    .
→         a     ca    de    mi    ci    <an>          →      a     ca    de    mi    ci    <an>
```

Non-cyclic stratum

```
                                  *                                          *
Stress Copy   (*    *     *       *)                          (*    *     *  *)    *
              *     *     *       (*    *)    *      Alt.     (*)   (*)   (*) (*)  (*    *)
→             a     ca    de      mi    ci    an     →        a     ca    de  mi   ci    an

Non-cyclic                  *                                                  *
MSR        (.    .    .     *)                Stress              (*    .    .     *)
           (*    *    *     *)    *           Enhancement 1st σ   (*)   (*   *     *)    *
           (*)   (*)  (*)   (*)   (*    *)                        (*)   (*   *)    (*)   (*    *)
→          a     ca   de    mi    ci    an    →                   a     ca   de    mi    ci    an


                                        *
Stress                   (*    .    .   *)
Deletion 2nd, 3rd, 5th σ (*)   (.   .   *)
Reduction                (*)   *    *   (*)   *    *
→                        a     ca   de  mi    ci   an
```

(55b) *acàdemícian*

```
Stress                      *                                         *
Enhancement  (.    *    .   *)                 Stress Deletion   .    *    .    *)
2nd σ        (*    *)   (*  *)    *            1st, 3rd, 5th σ   (.   *)   (.   *)   .
             (*)   (*   *)  (*)   (*    *)     Reduction         *    (*   *)   (*)  *    *
→            a     ca   de  mi    ci    an     →                 a    ca   de   mi   ci   an
```

As we see, Stress Enhancement is successful here. The last step in both cases is the deletion of asterisks over open syllables by (56). These syllables are also reduced by Reduction, which works on syllables that do not have a mark on line 1.

(56) **Stress Deletion (SD)** (HV: 239)

Over a stress well, delete asterisks on line 1 and above, provided that the well is assigned to a syllable with a nonbranching rime or to a Latinate prefix.[7]

The same method can be followed for *dissimilarity* (57)*,* though the variant with adjacent initial stresses causes problems. The problem with this third variant is that if the first syllable is enhanced by (53), nothing prevents the second syllable from becoming stressless, due to the Stress Well under it (cf. the derivation in (55a)). Another possibility might be that Stress Enhancement does not work, but derivation stops when the first two syllables have an equal number of asterisks. This would be a similar solution to the one given by Selkirk for *Ticonderoga* (see (36b) above), but this possibility is not discussed in HV, where the problem of adjacent stresses is not dealt with.

(57) *dìssimilárity ~ dissìmilárity ~ dìssìmilárity*

(57a) *dìssimilárity*

Cyclic stratum

	*			*			MSR	*	*		*		
Accent	*	*	*	*	*	.	a–c	(*)	(*	*)	(*	*)	.
→	dis	si	mi	lar	i	<ty>$_{em}$	→	dis	si	mi	lar	i	<ty>$_{em}$

MSR				*			MSR				*		
d–f	(*	*	.	*)			g	(.	.	.	*)		
	(*)	(*	*)	(*	*)	.		*	*	*	(*	*)	.
→	dis	si	mi	lar	i	<ty>$_{em}$	→	dis	si	mi	lar	i	<ty>$_{em}$

Non-cyclic stratum

							Non-cyclic				*		
							MSR	(.	.	.	*)		
Stress Copy	(*	*	.	*)	*			(*	*	.	*)	*	
Alternator	(*)	(*	*)	(*)	(*	*)		(*)	(*	*)	(*)	(*	*)
→	dis	si	mi	lar	i	ty	→	dis	si	mi	lar	i	ty

Stress				*							*		
Enhancement	(*	.	.	*)				(*	.	.	*)		
1st σ	(*)	(*	.	*)	*		Stress	(*)	(.	.	*)	.	
	(*)	(*	*)	(*)	(*	*)	Deletion 2nd, 5th σ	(*)	*	*	(*)	*	*
→	dis	si	mi	lar	i	ty	→	dis	si	mi	lar	i	ty

[7] Stress Well (HV: 238): every stressed syllable automatically induces a well under the syllable adjacent to it, provided that the stress of the latter is of lesser magnitude than the stress of the former.

(57b) *dissìmilárity*

Stress				*							*		
Enhancement	(.	*	.	*)				(.	*	.	*)		
2nd σ	(*	*)	(.	*)	*		Stress	(.	*)	(.	*)	.	
	(*)	(*	*)	(*)	(*	*)	Deletion 2nd, 5th σ	*	(*	*)	(*)	*	*
→	dis	si	mi	lar	i	ty	→	dis	si	mi	lar	i	ty

(57c) *dìssìmilárity*—underivable

Before going on to the third example, *emanatory,* some additional rules need to be discussed. The first one is the Rhythm Rule (58), which shifts main stress to the left and by doing so creates post-tonic secondary stress on the originally primary stressed syllable. This rule is a non-cyclic one, and as such it is applied only once.

(58) **Rhythm Rule (RR)** (HV: 235)

In a constituent C composed of a single word, retract the right boundary of C to a position immediately before the head of C, provided that the head of C is located on the last syllable of C and that it is preceded by a stressed syllable.

Another rule that is needed below is Shortening (HV: 253), which shortens vowels in syllables that are heads of binary feet (σ CV), but do not carry main stress (have an asterisk on line 1 but not above). This rule is the last one in the cyclic rule block, and words may be exceptions to it. We must also note that word-final *-y* is syllabified rather late in the derivation (HV: 239), which means *-ory* is treated as monosyllabic (HV: 260). Additionally, *-ory* is regarded as a separate stress-domain. As a result of this, at the beginning of the last cycle the pattern derived in the previous cycle is not erased, due to (59).

(59) **Stress Erasure Convention** (HV: 83)

In the input to the rules of cyclic strata information about stress generated on previous passes through the cyclic rules is carried over only if the affixed constituent is itself a domain for the cyclic stress rules. If the affixed constituent is not a domain for cyclic stress rules, information about stresses assigned on previous passes is erased.

The wording of (59) is misleading, because what it intends to say is that "stress erasure applies only when the affix itself is not a domain for stress rules" (HV: 83), meaning that stress erasure applies if the string constitutes only one stress domain (i.e. not in compounds and not in words with the ending *-ory, -oid, -ode* etc.). This reading is supported by derivations given in HV (pp. 256, 261).

HV derive one *-atory* word, *antícipatòry,* which is the American variant. They do not deal with British pronunciations. Their derivation is reproduced in (60), where the two domains are marked by braces. Here the suffix is treated as a whole, *-atory,* and it is a domain on its own, made up of two syllables, because the word-final *-y* is only syllabified later in the derivation, in the non-cyclic stratum. Whether the vowel *-a-* is short or long is irrelevant, the result will be the same in both cases. If it is underlyingly long, Shortening applies to it regularly, since it is in a stress well. HV only provide grids for the non-cyclic stratum (where the two domains are joined), adding that the final consonant of the stem *anticip-* is extrametrical in the cyclic block. The Rhythm Rule retracts the main stress to the stem and Stress Deletion eliminates stress on the third syllable. The asterisk over the first syllable cannot be deleted, because this syllable has a branching rime. Here a line 1 grid mark probably means that the vowel does not undergo reduction. Later in the derivation the *-y* is syllabified.

(60) *antícipatòry* (HV: 261)

Non-cyclic stratum

					Non	.	.	.	.	*	RR	.	*	.	.	.
.	*	.	.	*	-cyclic	(.	*	.	.	*)		(.	*)	.	.	*
(.	*)	.	(.	*)	MSR	(*	*)	*	(.	*)	SD	(*	*)	.	(.	*)
*	(*	*)	*	(*)	Alt.	(*)	(*)	(*	*)	(*)		(*)	(*)	*	*	(*)
{an	ti	cip}	{at	ory}	→	an	ti	cip	at	or	→	an	ti	cip	at	ory
										y						

Now let us turn to the word *emanatory*. The American pattern can be derived if we follow (60), i.e. if we treat it as two domains ({*eman*}{*atory*})(61). The stem-final consonant is extrametrical. Here we show the version where the *-a-* of the ending is long, and as such is stressed by the Accent Rule.

(61) *émanatòry*

Cyclic stratum

						*	.	.	*
Accent	*		*	*	MSR	(*	.)	(*	*)
→	*	*	*	*	a–f	(*	*)	(*)	(*)
	{e	ma<n>}	{at	ory}	→	{e	ma<n>}	{at	ory}

	*	.	.	*
MSR	(*	.)	(.	*)
g	(*	*)	*	(*)
→	{e	ma<n>}	{at	ory}

Non-cyclic stratum

Non-cyclic MSR	.	.	.	*	RR	*	.	.		
	(*	.	.	*)	SD, Shortening,	(*)	.	.	*	
	(*)	(*	.	*)	Reduction,	(*)	(.	.	*)	
Alternator	(*)	(*	*)	(*)	*-y* syllabification,	(*	*)	*	(*	*)
→	e	man	at	ory	→	e	man	at	or	y

The British variants cannot be handled in this way, because here *-ory* never bears stress (62). A solution, which is not provided by HV, is to treat the word *emanatory* as {*emanat*}{*ory*}, i.e. here only the *-ory* part of the complex ending constitutes a stress domain. This division is supported by the fact that the word *emanate* exists and that other *-ory* words, such as *refectory* are analysed this way by HV. Even under this analysis, only one variant, *èmanátory*, can be derived without problems (62a). In the case of *émanàtory,* primary stress should be carried to the first syllable, but the Rhythm Rule, which is the only operation that can move stresses, applies only once, when it carries stress from the ending to *-a-*. The last variant, *émanatory,* could be derived if it was possible to get rid of the secondary stress of the American variant (61). This, however, cannot be done in this rule system.

(62) *èmanátory ~ émanàtory ~ émanatory*

(62a) *èmanátory*

						.	.	*	*		.	.	*	*
Accent	.	.	*	*	MSR	(*	.	*)	(*)	MSR	(.	.	*)	(*)
	*	*	*	*	a–f	(*	*)	(*)	(*)	g	*	*	(*)	(*)
→	{e	ma	nat}	{ory}	→	{e	ma	nat}	{ory}	→	{e	ma	nat}	{ory}

					Non-cyclic	.	.	.	*	RR	.	.	*	.
	.	.	*	*	MSR	(.	.	*	*)		(.	.	*)	*
	(*	.	*)	(*)		(*	.	*)	(*)		(*	.	*)	(*)
Alt.	(*	*)	(*)	(*)	→	(*	*)	(*)	(*)		(*	*)	(*)	(*)
→	e	ma	na	tory		{e	ma	na	tory}	→	{e	ma	na	tory}

	.	.	*	.	.		.	.	*	.	.
Stress	(*	.	*)	*	.	Shortening,	(*	.	*)	.	.
Enhan. 1^{st} σ,	(*)	(.	*)	(*)	.	Deletion	(*)	(.	*)	.	.
-y syllabification	(*	*)	(*)	(*	*)	over Well	(*	*)	(*)	*	*
→	{e	ma	na	to	ry}	→	{e	ma	na	to	ry}

(62b) *émanàtory*—underivable
(62c) *émanatory*—underivable

HV's system could generate alternative patterns with the help of Stress Enhancement, which is a rather 'hazy' rule that might generate unwanted stresses. This rule suggests that nothing influences stressing on the first two syllables. In other cases there is no possibility to have alternative patterns for a certain string. I proposed, in the case of *emanatory,* that the word can be broken up into two stress domains in two ways, which makes it possible to have two patterns for one string. This proposal, however, is not sufficient—it only increases the number of derivable variants by one. Furthermore, the problem of adjacent stresses cannot be solved in HV's system either.

2.6 Burzio (1994)

This section is dedicated to the description of Burzio (1994)(B94), but certain aspects of the theory are better understood from B96 and B99. If a certain issue is present in all three works, I will use the ‘cover term’ Burzio, without any specific reference. The stress treatment of Burzio is rather different from the approaches described above, because stress is not the result of ordered rules. B94 has ranked constraints against which stress patterns are checked. This means that the constraints (some of which are violable) give the range of possible stress patterns for a certain string. Since some constraints are more likely to be violated than others, if there is more than one possible pattern for a string, the number of violations show which pattern is most likely to occur. Vowel length and stress are checked simultaneously, i.e. neither is thought to be the function of the other, but their connection is recognised.

The constraints work on the spelled form of the word, which is not customary, though Fudge (1984) also gave an algorithm to compute syllable weight (or strength in his terms) from the orthographical form. The most unusual convention of B94 is that geminate consonants are cut by syllable boundary, though orthographical geminates in English are only pronounced as geminates at certain morpheme boundaries (e.g. *annoy* /əˈnɔɪ/ vs. *unnatural* /ʌnˈnætʃərᵊl/). As a result of this assumption, heavy syllables are ‘born’ in words which traditionally do not contain them, e.g. *annoy* = an.noy = HH. The unfavourable effects of this are mostly compensated for by another assumption, namely that syllables closed by sonorants or *s* (marked by H_n) are treated in a special manner by B94 (p. 62, 93, etc.): these count as heavy in foot-initial position (i.e. under stress) and behave as light syllables otherwise. The special treatment of syllables ending in sonorants is not new: Selkirk (1984: 127) has a special retraction rule (Sonorant Retraction) for words that contain a sequence of three syllables the middle one of which ends in a sonorant. This rule moves the stress to the left from a syllable ending in a sonorant (e.g. *mó.men.tary* vs. *tra.jéc.tory*). A similar rule is proposed by Halle—Vergnaud (1987: 257) (Sonorant Destressing), which destresses an H_n syllable if it is the middle one in a word composed of three syllables. The same examples (i.e. *mó.men.tary* vs. *tra.jéc.tory*) illustrate the work of this rule, because HV treat the endings *-ary/-ory* as monosyllabic at the time of destressing. Those words that contain non-sonorant orthographical geminates might cause problems, but they rarely do, since in several cases (e.g. *áttic*) it is irrelevant whether the syllable in question is closed or not.

We must mention the strong resemblance of Burzio's theory to classical Optimality Theory (OT) (Prince—Smolensky (1993)), which also operate with ranked constraints. In OT the underlying form of a word is transformed into surface forms by GEN, and these surface forms are filtered by the constraints, which select the optimal candidate. Burzio, however, rejects the notion of underlying representation. He claims that lexical items are stored together with their stress patterns in the lexicon, and constraints work only once: when the item is stored. The constraints check whether the form to be stored is well-formed.

B94 does not use the ‘traditional’ OT constraints such as ALIGN, NONFINALITY (for an account of English stress with these constraints see e.g. Hammond, 1996, Rice, 1996). The constraints of B94, which are grouped into three sets (Metrical Well-formedness, Metrical

Alignment, Metrical Consistency), may refer to the following types of information: syntactic category (verb vs. non-verb), syllable weight, position of a syllable (edge vs. non-edge), segmental makeup of a syllable (ending in a sonorant vs. ending in an obstruent), connections between words in the lexicon (related words/similar words vs. different words). The last type of information deserves special attention. Burzio says that the fact that related words tend to have the same stress-pattern is reflected in the lexicon by connections between the related items, which is the basis for the constraints of Metrical Consistency (cf. (71) below).

B94 claims that in his system exceptionality is only witnessed at the lowest level: at the level of segments. Two kinds of exceptional segment are recognised: null segments and bipositional consonants. B94 thinks that all words end in a vowel (p. 46). This vowel may be overt (e.g. *ago*) or a vowel without phonetic realisation, which is represented by a mute *e* in spelling or by a null segment (e.g. *Anne, radiumϕ*). The use of null segments (which are allowed word finally after a consonant, or word-initially before an *s*+obstruent cluster (B94: 116)) will be described below. Here we just mention that empty segments are used by other authors as well, e.g. Government Phonology (e.g. Kaye—Lowenstamm—Vergnaud, 1990)) or Szigetvári (1999).

Bipositional consonants (B94: 52–58) are in fact geminates that are not present in the spelled or pronounced form of a word, but are needed to make the preceding syllable heavy to give the correct stress pattern (an idea that appeared in SPE: 82). To illustrate the use of these consonants and null segments, let us look at monosyllabic words. B94 thinks that every word must be minimally disyllabic, because monosyllabic feet are not allowed. Therefore, the word *get* must have two syllables, the second of which is headed by a null segment: get.tϕ. The consonant is doubled because ideally binary feet are of the type (Hσ). Furthermore, the form *getting* (which is pronounced with a lax stem vowel) will have the same structure (get.tin)gϕ in this way, where the overt vowel of the ending replaces the null vowel of the stem.

In B94 words are cut up into syllables by a syllabifying algorithm, which is not described explicitly anywhere. It seems (from the example words) that geminate consonants are always cut by the syllable boundary, while obstruent+liquid sequences (traditionally called complex onsets) are not, i.e. *pillow* = pil.low, *hatred* = ha.tred. The sequence of vowels pronounced as a single sound is generally parsed as two syllables, e.g. *Canádian* = ca(ná.di.a)nϕ /ɪə/, *òrganizátion* = (òr.ga.ni)(zá.ti.o)nø /ə/, but monosyllabic parsing also occurs, e.g. *òrganizátional* = (òr.ga.ni)(zá.tio.na)lø /ə/(for further details see B94: 156–161). This issue is important since the number of syllables is crucial from the point of view of stressing. Burzio does not give arguments for why *-ation* is parsed in two ways, i.e. a.ti.o)nø and a.tio.n, probably he wants to maintain the pre-determined parsing for *-al* = a)lø. The double parsing of the same sequence is not an elegant solution.

The syllables can be of four types: H(eavy), H_n, L(ight), W(eak). Heavy and light syllables are understood traditionally. H_n syllables, as we have seen, end in a sonorant or *s*. Weak syllables are defined as “being acoustically weak”, and have the subtypes given in (63).

(63) **Weak syllables** (B94: 16–17, 70–72)

a) consonantal nucleus (sonorants) e.g. car. bun.cle

b) a high vowel (*i, u*) in the nucleus e.g. ac.cu.ra.cy

c) null vowels (ϕ) in the nucleus e.g. as.te.ris.kϕ

Syllables are arranged into feet, which are normally left-headed. The possible foot-types are given in (64): only binary and ternary feet are allowed. No other foot is well-formed, i.e. Metrical Well-formedness Constraints are not violable. Though B94 claims that only segments may be exceptional in his theory, there is a foot type which is rather different from those given in (64a–b). This binary foot (64c) can appear at the beginning of words, and is composed of a syllable headed by the null segment and a heavy syllable. Since a syllable headed by a segment that has no phonetic realisation cannot bear stress, this foot will be right-headed. This is a device by which adjacent initial stresses can be represented in B94.

(64) **Possible feet** (Metrical Well-formedness)(B94: 165)

(64a) Non-rightmost		(64b) Rightmost		(64c) Special initial	
(H σ)	mo(nòn.ga)héla	(H σ)	a(gén.da)	(ϕ.H)	(ϕ.dìs)símilarϕ
(σ L σ)	(wìn.ne.pes)sáukee	(σ L σ)	a(mé.ri.ca)		
(L σ)	ac(cé.le)ràte	#(L σ)	(hó.nes)t		

Binary feet can be headed either by a heavy or a light syllable. (Lσ) can appear word-finally only if it is the only foot in the word. It freely occurs in earlier positions, i.e. if any kind of foot follows. Ternary feet must have a light medial syllable. A subtype of the (Hσ) foot is the weak foot (HW), which normally carries post-tonic secondary stress. B94 recognises three levels of stress (65).

(65) **Stress levels** (B94: 16)

(65a) primary stress falls on the head of the rightmost non-weak foot,

e.g. ac(cé.le)(rà.te) = σ (Lσ)(HW)

(65b) secondary stress falls

(i) on the head of a weak foot (post-tonic), e.g. ac(cé.le)(rà.te) = σ(Lσ)(HW)

(ii) on foot-heads before main stress (pre-tonic),

e.g. (wìn.ne.pes)(sáu.kee) = ((Lσ)(Hσ)

(65c) all syllables that are not foot-heads are zero-stressed

(i) unparsed syllables, e.g. ob(jéc.tio.na)ble= (σLσ)W

(ii) non-heads in feet, e.g. ob(jéc.tio.na)ble= σ(σLσ)W

Contrary to the widely accepted view that long vowels are stressed, B94 thinks there is no such clear-cut relationship between vowel length and stress (66). Though heavy syllables tend to be stressed (cf. (70b) below), heavy syllables can be the second or the third syllable of a foot (irrespective of whether they are heavy due to a long vowel or a coda consonant), as in (66c–d).

(66) **Vowel quality and stress** (B94: 48–52, 55, 112–113)

(66a) short, stressed e.g. *sín* /sɪn/ = sín.nϕ = (Hσ)

(66b) long, stressed, e.g. *séen* /siːn/ = sée.nϕ = (Hσ)

(66c) short, unstressed, e.g. *próduct* /ˈprɒdʌkt/ = (pró.duc)tϕ = (LH)

(66d) long, unstressed, e.g. *rábbi* /ˈræbaɪ/ = (ráb.bi) = (HH)

Parsing is not necessarily exhaustive in B94: at word edges certain syllables may be left unparsed. At the beginning of a word one syllable can be left out. This syllable should be a light one, because initial heavy syllables are stressed, as B94 (p. 155) claims. Though B94 summarises the analysis of single initial syllables as (67), which suggests only parsings #L(and (ø.H) are well-formed, it is not explicitly declared that single initial H syllables are always parsed and single initial syllables are always unstressed. In B94 we find initial unstressed CVC syllables in the example words (cf. *objectionable* in (68a) below), but syllables with a long vowel in this position are always analysed as stressed in B94, e.g. *prò:dúction* = (ø.prò:)(dúc.ti.o)nø. This question will be investigated throughout the dissertation, especially in Chapter 6, because the constraint *#H(is obviously too strong.

(67) **The analysis of single initial syllables** (based on B94: 155)

#L(*(ø.L)

*#H((ø.H)

Two syllables cannot be left unparsed word-initially, since in English either the first or the second syllable must bear stress. The initial unstressed syllable is not called ‘extrametrical’ by B94, the name is reserved for unparsed syllables at the right edge of the word and exceptional cases (68b).

(68) **Extrametricality**: only W syllables (B94: 47, 309)

(68a) word -finally (1 or 2 syllables), e.g. (ás.te.ris)kϕ, ob(jéc.tio.na)ble, (ál.te.ra)ti.ve

(68b) exceptionally word-medially, e.g. a(mè.ri.ca)ni(zá.tio)nϕ

Now let us discuss constraints that may be violated. The violations of constraints are not so strictly counted as in OT, though the fewer constraints are violated, the more likely a pattern is to occur. Let us see the work of these constraints on the sequence #HLHW#. I chose this sequence because there is more than one way to parse it: the parsings (69a) and (69b) are both well-formed according to (64).

(69) **#HLHW#**

(69a) (HL)(HW)

(69b) (HLH)W

Metrical Alignment constraints (70) help to decide what foot structure a sequence will have if there is more than one possible parsing. The four constraints below are ranked: (70a) is the strongest and (70d) is the weakest. Strong Retraction (70a) predicts that a binary foot should appear before a weak foot, which is true for (69a) but irrelevant for (69b), because there is no weak foot. (70b) predicts (69a) will be more frequent, because heavy syllables should be aligned with stresses. In the case of verbs (70c) would also predict the first pattern (69a). Furthermore, (70d) says that the number of unparsed syllables should be minimised, which favours the parsing in (69a) again. This means that the theory predicts that the great majority of words with the structure #HLHW# will have two binary feet.

(70) **Metrical Alignment** (B94: 166)

(70a) **Strong Retraction Condition (SR)**

... (σσ)(HW)#

(70b) **Alignment of heavy syllables**

*(σ ... H ...) where the sequence ... contains no foot boundaries

(70c) **Metrification of verbs**

... ϕ)

(70d) **Exhaustive Parse**

#(... / ...)#

It is quite difficult to test the validity of this claim, because other factors (such as the effect of affixes) influence stress placement in words as long as this. I searched a word database of 109583 items for words with the structure #CVCCVCVCC?#, where the ? stands for mute *e, y* or nothing (i.e. ϕ). I found 1652 items, but these words had to be filtered again. I eliminated words with an H_n syllable before the weak one (because this may count as light), words with the plural marker *-s*, compounds, and those words where the CC stood for a complex onset, such as *tr*. After this selection, the list shrank to 14, out of which there are 10 words ending in *-ics* (e.g. *mechánics*), which is a stress-placing suffix, the four remaining words are *Kórsakòff* (a Russian name), *mìgnonétte* (French ending), *mìsdiréct* (prefixed), *hódgepòdge*. Though these four words have two binary feet, I do not think this is ample evidence. Though it is not easy to show clear cases where Metrical Alignment alone decides, these constraints are still necessary.

The third kind of constraint is only relevant for derived items. Metrical Consistency (71) says that morphologically related words tend to have the same stress pattern, as long as they do not violate Metrical Well-formedness. In practice this means that stressed syllables tend to retain their stress in the course of derivation (B94: 166). The strong form of stress preservation is if the degree of stresses is also preserved, e.g. (prò.pa)(gán.da) → (prò.pa)(gán.dis)tϕ. If only weak preservation is possible, the stem primary stress is reduced to secondary, as in na(pó.le.o)nϕ → na(pò.le)(ó.ni.cϕ).

It is not only stems, but also suffixes that tend to preserve their structure. In the case of suffixes, B94 proposes that they should be listed in the lexicon with pre-determined structure (i.e. syllable and foot boundaries, e.g. *-ity* = i.ty), with a right boundary after it). This ensures that suffixes always have the same effect on the stress pattern of the preceding stem. This issue will be discussed in detail in Chapter 3 below, where it will be proposed that prefixes also tend to be metrically consistent, though not to the same degree as suffixes.

(71) **Metrical Consistency** (B94: 228)

Every morpheme must be as metrically consistent as possible

There is one more constraint that needs to be discussed, which concerns the length of vowels. Generalised Shortening (72) says that vowels shorten in affixed words, as in *tone* /əʊ/ → *tonic* /ɒ/. Not all affixes induce shortening, e.g. *tone* /əʊ/ → *toneless* /əʊ/ (cf. Word-condition in Section 5.3) and since GS is violable, shortening does not always take place, even if the affix can shorten stem vowels (e.g. *accú:mulà:te* → *accú:mulà:tive* ~ *accú:mulative*).

(72) **Generalised Shortening (GS)** (B94: 320)

V must be short in ... ___ ... - affix

(linear order irrelevant)

Now let us turn to the discussion of our example words. (73) shows the parsings for *academician*. Though here—for the sake of visibility—the derivation is shown as a process that builds structure, the constraints are thought to check the already existing structures. All those patterns that do not conform to the constraints are 'declared' to be ill-formed. The word *academician* is composed of 6 light syllables and a weak syllable headed by a null segment (73/1). As *academician* is a derived word, all three groups of constraints will work. The ending *-an* has the pre-determined parsing a)nϕ (73/2), i.e. if a light syllable precedes, a ternary foot can be built, because the (Lσ) foot is not allowed at the right edge if there are other feet in the word (64b) (73/3). However, both a ternary and a binary foot is possible before another foot, i.e. Metrical Well-formedness predicts variation (73/4). Only the weakest Metrical Alignment constraint, Exhaustive Parse (70d) is relevant here, which prefers the ternary parsing (73/5). Metrical Consistency, however, says that the word should be similar to other words with the same stem (*acádemy, àcadémic*), i.e. Stress Preservation predicts variation. In sum, the constraints would accept two parsings for this sequence, and the one with two ternary feet is predicted to be preferred. Actually, these are the two patterns given by Wells (1990), in the order predicted (73a,b).

(73) *àcademícian* ~ *acàdemícian*

1. syllabification: a.ca.de.mi.ci.a.nϕ = LLLLLLW
2. *-an* = a)nϕ (B94: 202) ⇒ LLLLLL)W (Suffix Consistency (71))
3. (σLσ) ⇒ LLL(LLL)W (Metrical Well-formed. (64b))
4. LLL = (LLL)/L(LL) ⇒ (LLL)(LLL)W / L(LL)(LLL)W (Metrical Well-formed. (64a))
5. #(LLL) >> #L(LL) (Exhaustive Parse (70d))
6. *àcadémic* suggests (LLL)(LLL)W ⇒ (73a)
   acádemy suggests L(LL)(LLL)W ⇒ (73b) (Stem Consistency (71))

(73a) (à.ca.de)(mí.ci.a)nϕ

(73b) a(cà.de)(mí.ci.a)nϕ

The second example word is *dissimilarity* (74), which is again a derived word. The process of checking is similar to the previous one. A crucial difference is that the first syllable of the word is closed by *s,* i.e. it is a H_n syllable that counts as light when not a foot-head, but is heavy if stressed. This means that the first syllable and the following two light syllables can be parsed in three ways that satisfy Metrical Well-formedness (74/4), out of which two satisfy Exhaustive Parse (74/5). All three well-formed forms are attested, out of which the one with the ternary foot is the most frequent (this form satisfies all constraints), and the other exhaustive variant is the least frequent. The reason may be that the initial degenerate foot is marked, as it is right-headed.

(74) *dìssimilárity* ~ *dissìmilárity* ~ *dìssìmilárity*

1. syllabification: dis.si.mi.la.ri.ty = H_nLLLLW
2. *-ity* = i.ty) (B94: 200) ⇒ H_nLLLLW) (Suffix Consistency (71))
3. (σLσ) ⇒ H_nLL(LLW) (Metrical Well-formed. (64b))
4. H_nLL = (H_nLL) / H_n(LL) / (ϕ.H_n)(LL) ⇒ (H_nLL)(LLW) / H_n(LL)(LLW) / (ϕ.H_n)(LL)(LLW) (Metrical Well-formed. (64a,c))
5. #(H_nLL)(LLW)/ (ϕ.H_n)(LL)(LLW) >> # H_n(LL)(LLW) (Exhaustive Parse (70d))
6. *dissímilar* suggests H_n(LL)(LLW) ⇒ (74b)
   dìssímilar suggests (ϕ.H_n)(LL)(LLW) and (H_nLL)(LLW) ⇒ (74c) / (74a)
   símilar suggests H_n(LL)(LLW) and (ϕ.H_n)(LL)(LLW) ⇒ (74b) / (74c) (Stem Consistency (71))

(74a) (dìs.si.mi)(lá.ri.ty)

(74b) dis(sì.mi)(lá.ri.ty)

(74c) (ϕ.dìs)(sì.mi)(lá.ri.ty)

The case of the third example word, *emanatory* (75), is not as straightforward as the previous ones. The first problem is caused by the ending *-ory,* because in American variants it is stressed, i.e. *-o-* should constitute a heavy syllable, while in British cases the ending is unstressed. Therefore it seems there is more than one pre-determined parsing of the ending.

B94 (pp. 268–270) proposes that in British English the ending has the structure o)ry (⇒ (H o)ry ~ (σL o)ry), while in American it is (ò.ry), or if a heavy syllable precedes it is o)ry, as in *reféctory* = re(féc.to)ry, which is identical to the British version. Therefore, B94 predicts the patterns *èmanátory* and *émanatòry*$_{\text{Am}}$ (75b,d) are regular.

In the British case (75i) the ending is parsed as H)W, and *-ate-* does not shorten (violates GS). The final foot must be binary and as both syllables are heavy, it must carry primary stress. The preceding two light syllables must constitute a binary foot, which parsing is supported by stress preservation from the stem *émanàte.* As for the American variant (75ii), the ending *-ory* is a foot on its own, bearing secondary stress. The preceding *-ate-* shortens, yielding a light syllable, and thus only the first stem stress of *émanàte* might be preserved. The first three light syllables might be parsed in two ways: either as a ternary foot, which violates Strong Retraction but preserves the first stem stress, or as an unparsed syllable and a binary foot, which obeys Strong Retraction but violates Metrical Consistency. The ternary analysis is chosen because it preserves the stem stress.[8]

(75) *émanàtory* ~ *èmanátory* ~ *émanatory* ~ *émanatòry*$_{\text{Am}}$

(i) British variant

1. syllabification: e.ma.na:.to:.ry = LLHHW (*-na:-* long, *GS)
2. *-ory* = H)W in British (B94: 268) ⇒ LLHH)W (Suffix Consistency (71))
3. (Hσ) ⇒ LL(HH)W (Metrical Well-formedness (64b)) *(Alignment of H syllables (70b))
4. LL = (LL) ⇒ (LL)(HH)W (Metrical Well-formedness (64a))
5. *émanàte* suggests (LL)(HH)W ⇒ (75b) (Stem Consistency (71)

(ii) American variant

1. syllabification: e.ma.na.to:.ry = LLLHW (vowel in *-na-* shortens GS (72))
2. *-ory* = (HW) in American (B94: 268) ⇒ LLL(HW) (Suffix Consistency (71))
3. (σLσ) ⇒ (LLL)(HW) (Metrical Well-formed. (64b))
   (L σ) ⇒ L(LL)(HW) (Strong Retraction (70a)) *(Exhaustive Parse ((70d))
4. *émanàte* suggests (LLL)(HW) ⇒ (75d) *(Stem Consistency (71))

(75a) ?(é.ma)(nà:.to)ry

(75b) (è.ma)(ná:.to)ry

(75c) ?(é.ma.na)to.ry

(75d) (é.ma.na)(tò:.ry)

[8] In fact B94 predicts that the pattern L(LL)(HW) would also be possible, because if GS is satisfied, stem stresses are not necessarily preserved, at least in the case of *-ative* words, e.g. *á:lternà:te* → *a:ltérnative.*

If we maintain the assumption that *-o-* yields a heavy syllable, the other two patterns, *émanàtory ~ émanatory,* would prove ill-formed. In *émanàtory* a weak foot (HW) should be constructed over *-ato-*, which is only possible if *-o-* yields a weak syllable. In *émanatory* the ending *-ory* must be extrametrical, and extrametricality is only relevant to weak syllables. This problem is discussed in detail in Section 10.

To sum up the results of the above investigation, we can say that B94's theory generally gave correct results for the first three example words. The problems posed by *emanatory* could be solved if we allowed the schwa of *-o-* in *-ory* to yield a weak syllable.

2.7 Halle (1998)

The stress-system of Halle (1998)(H98) is based on ordered rules, and stress levels are represented by a bracketed grid, as in HV. Here, however, foot boundaries are marked by unmatched parentheses, following Idsardi (1992). Stress-bearers are syllables, which may be marked extrametrical at the right edge of a domain by Edge-marking (cf. (76) below). Consonants at the right edge may also be invisible to the stress rules, but this is not stated by H98 at all, but his derivations seem to suggest this (on this issue see a more detailed discussion in Wenszky, 1999).

Derivation is cyclic, but this approach does not recognise stress-preservation—which is one of the greatest drawbacks of this system—, and thus all structure is erased before a new cycle is started. The cycle is only needed because other rules of phonology also work in cycles and they might need information provided by stress rules on previous passes. It is assumed that cyclic rules are applied every time a cyclic affix is added to the stem. Non-cyclic rules, however, only pass through the word once, when all the affixes have been added. Each constituent of a word is marked for cyclicity ([±cyclic]), and only the relevant rules work on them (H98: 554, cf. HV: 79–81). If a non-cyclic affix attaches to the stem, stresses remain untouched (e.g. in *expréssion* → *expréssion<u>less</u>*).

At the beginning of a new cycle, after the erasure of all stresses and structure, derivation starts again, as if the word—even if it is a derived item—were monomorphemic. Each syllable head (as a stress-bearer) is assigned a line 0 asterisk, and then some morphemes (e.g. *-ure, -y* (H98: 557)) are marked unstressable. An unstressable syllable (maximally one syllable per word) always appears at the right edge of the syntactic domain and is represented by a dot on the grid.

The next step in the derivation is to mark edges: the Edge-marking rules (76) select the boundary of a foot on line 0 by inserting unmatched parentheses into the grid. The two rules are disjunctively ordered, i.e. if (76a) can apply, (76b) is blocked, if (76a) cannot apply, (76b) will come into play. There are several lexical exceptions to the rules in (76), such as the majority of verbs and unsuffixed adjectives, which are exempt from both kinds of edge-marking.

(76) **Edge-marking rules** (H98: 549)

(76a) RLR Edge-marking

∅ →] / * ___ * ## line 0

Condition J: Final * projects short vowel.

(76b) LLR Edge-marking

∅ → [/ * ___ * ## line 0

RLR Edge-marking (76a), which inserts a Right parenthesis to the Left of the Rightmost syllable (hence the name), partly does the work of rules traditionally referred to as rules of extrametricality. When an asterisk is followed by a right parenthesis or preceded by a left parenthesis without intervening parentheses, it will belong to a foot. The two kinds of boundary marks (i.e. brackets [ ] inserted by Edge-marking and parentheses ( ) inserted by the MSR) have the same effect, they are just differentiated by H98 to make reading of grids easier. If an asterisk—and thus the syllable head and the syllable—remains unparsed it will not receive any stress in the cyclic stratum. If such an unparsed asterisk represents the final syllable of the word, the MSR (77) will not see it, since its computation starts at the boundary inserted before this asterisk. This corresponds to the case of syllable extrametricality, which is needed for most nouns in English.

LLR Edge-marking (76b), as it inserts a left parenthesis, creates a foot at the end of the word, but its head will only be marked by the Main Stress Rule (77c). This applies right after Edge-marking and marks the syllable which will carry the primary stress of the word. The MSR (77) is different from the English Stress Rule of LP (p. 278) and the MSR of HV (p. 228) in that it is not iterative, therefore it does not create superfluous secondary stresses. This way, conflation is successfully avoided, which is a great advantage, since no effort is wasted to create metrical structure that is erased later. However, as mentioned above, the cyclic application of rules does exactly this—it creates stresses that are erased at the beginning of the next cycle.

The MSR (77) below actually arises by collapsing two very similar rules into one. In one case the MSR starts from an already existing boundary (marked by P in the rules), and in the other from the end of the word (##). The meaning of < > is that if there is an edge-marking boundary in the grid, the MSR (77) will count from the boundary, not from the end. The word boundary functions as a starting point only when there are no edge-marks in the sequence, i.e. in words that are exempt from both types of edge-marking. The MSR works from right to left. (77b) only applies if (77a) cannot. (77a) skips a syllable ending in V(C) and another one before a boundary or the end of the word, and places a left parenthesis before these two skipped syllables. (77b) skips only one syllable and places the boundary there. This is actually the Weak Retraction pattern of LP, which LP only apply for secondary stresses. The third part of the rule, (77c), puts an asterisk above the leftmost asterisk of the foot created by LLR Edge-marking (76b) or MSR itself ((77a–b). Naturally, all words go through the MSR, because every English word must have a primary stressed syllable.

(77) **Main Stress Rule** (MSR) (H98: 549)

a. ∅ → (/ ___ * * <P *> ## line 0

Condition K: Second * projects vowel in light rime.

b. ∅ → (/ ___ * <P *> ## line 0

c. Line 0 heads are leftmost.

The P stands for a boundary of either kind:] or [.

The rules discussed up to this point select the most prominent syllable of the whole word and post-tonic secondary stresses. At this point these are both represented by a line 1 asterisk. The work of these rules is illustrated in (78) below.

(78) **The work of Edge-marking and the MSR** (based on H98: 548–550)

(78a) RLR Edge-marking

									MSR		*		
*	*	*	*	RLR Edge-m.	*	*	*]	*	a, c	*	(*	*]	*
A	me	ri	ca	→	A	me	ri	ca	→	A	me	ri	ca

							MSR		*	
*	*	*	RLR Edge-m.	*	*]	*	b, c	*	(*]	*
a	gen	da	→	a	gen	da	→	a	gen	da

(78b) LLR Edge-marking

							MSR	*		*
*	*	*	LLR Edge-m.	*	*	[*	a, c	(*	*	[*
ma	la	chite	→	ma	la	chite	→	ma	la	chite

							MSR		*	*
*	*	*	LLR Edge-m.	*	(*	[*	a, c	*	(*	[*
sta	lag	mite	→	sta	lag	mite	→	sta	lag	mite

(78c) Exception to Edge-marking

			MSR a, c		*	
*	*	*	No Edge-m.	*	(*	*
de	ve	lop	→	de	ve	lop

		MSR b, c		*
*	*	No Edge-m.	*	(*
u	surp	→	u	surp

At this point all stressed syllables that are marked have an equally high column of asterisks. Later, in the output of stress rules, however, secondary stresses will be represented by a lower column of asterisks than that of the primary stress, i.e. if line 0 marks stress-bearers, at least two other lines are needed to represent a word with three levels of stress. Secondary stresses occur either before or after the primary stress, and these cases are dealt with by two different rules in H98. Let us examine post-tonic secondary stresses first.

Post-tonic secondary stresses emerge as the result of LLR Edge-marking (76b) and the Rhythm Rule (79). RR is actually an edge-marking rule on line 1, which inserts a left parenthesis before the first asterisk on line 1. Since only those words have two asterisks on line 1 that have undergone LLR, only these will show the effect of (79). Here the primary stress will be on the first foot-head rather than on the second one, i.e. this is the way to derive post-tonic secondary stresses. In other cases, the grid gets one extra level, but the primary stress will automatically be on the syllable marked by the MSR.[9] The unbounded foot that emerges is left-headed, similarly to line 0 feet.

(79) **Rhythm Rule** (H98: 550)

a. ∅ → (/ ## ___ * line 1 LLL

b. Line 1 heads are leftmost.

As far as pre-tonic secondary stresses are concerned, H98 does not give a detailed account, though a great number of English words have these. The rule that is responsible for them is based on Halle—Kenstowicz (1991) and is stated in H98 as follows (80).

(80) **Iterative Foot Construction (IFC)** (H98: 565)

Construct binary feet by inserting right parentheses iteratively from left to right.

As a result of this rule, the asterisks that remain before the main stress on line 0 are mechanically arranged into binary feet, in a way that every odd-numbered syllable will get secondary stress. Though not stated formally in the article, these feet should also be left-headed. Since the Rhythm Rule (79) is a cyclic rule, while IFC (80) is a non-cyclic one that always follows the cyclic rules, the line 1 grid-marks constructed by (80) will never carry the primary stress (IFC counterfeeds RR). Furthermore, even numbered syllables can never carry secondary stress, which is contrary to the facts, as our examples will show.

Let us derive our example words now. As already noted, the real stress pattern of a word emerges in the last cycle, because all structure is erased at the beginning of every cycle. This is why only the last cycle is shown in the derivations below. The stress rules of H98 can only derive one pattern for *academician* (81), because IFC can only promote odd-numbered syllables to secondary stress. If *-ian* is one syllable, the word must be an exception to edge-marking, because otherwise stress would fall on *-de-*. If, however, *-ian* is disyllabic (as in all previous derivations), the word undergoes RLR Edge-marking. The result is the same. Since there is only one syllable on line 1, the Rhythm Rule cannot retract stress, it only builds one more line.

[9] Whether the application of the Rhythm Rule in words with one asterisk on line 1 is necessary is a theoretical question. If the minimal sufficient grid is aimed at, the Rhythm Rule should not work in these cases. If primary stresses of two different words should have equally high grids (so that they would be comparable more easily), the work of the Rhythm Rule is indispensable in every case.

(81) *àcademícian ~ acàdemícian*

(81a) *àcademícian*

											*								*		
MSR a, c				*			RR				(*			IFC	*			(*		
RLR	*	*	*	(*	*]	*		*	*	*	(*	*]	*		*	*)	*	(*	*]	*
→	a	ca	de	mi	ci	an	→	a	ca	de	mi	ci	an	→	a	ca	de	mi	ci	an

(81b) *acàdemícian*—underivable

If the last syllable of *dissimilarity* (82) is marked unstressable (82a.i), because it is a word-final *-y,* the word must be exempt from Edge-marking. If the final syllable is visible to the stress-rules, RLR Edge-marking works (82a.ii). Subsequently, the Rhythm Rule adds another line and IFC places secondary stress on the first syllable. The other variants cannot be derived because IFC cannot place stress on an even-numbered syllable and adjacent stresses cannot be derived either.

(82) *dìssimilárity ~ dissìmilárity ~ dìssìmilárity*

(82a) *dìssimilárity*

(82a.i)

Unstressable σ						
no Edge-marking				*		
MSR a, c	*	*	*	(*	*	.
→	dis	si	mi	lar	i	ty

(82a.ii)

RLR				*		
MSR a, c	*	*	*	(*	*]	*
→	dis	si	mi	lar	i	ty

				*							*		
RR				(*			IFC	*			(*		
	*	*	*	(*	*	.		*	*)	*	(*	*	.
→	dis	si	mi	lar	i	ty	→	dis	si	mi	lar	i	ty

(82b) *dissìmilárity*—underivable

(82c) *dìssìmilárity*—underivable

Though H98's system has serious problems deriving the patterns of the first two example words, all four variants of *emanatory* can be derived in his system, because he has special machinery to do that (H98: 561–563). There is a special rule (83), which makes *-at-* in the ending *-atory* unstressable. This is highly exceptional, since normally only the last syllable of a domain can be unstressable.

(83) ***-atory* shortening (optional)** (H98: 562)

In *-at-ory* the suffix *-at-* is shortened. In addition, *-at-* becomes unstressable if the preceding syllable ends with a light rime and in certain lexically marked cases.

Another special device is the optional rule (84) that deletes a boundary before the endings *-ary/-ory.*

(84) ***-ory/-ary* reduction** (H98: 558)[10]

```
( → Ø / (* ___  * ##     line 0
                   |
                +o/ary
```

In the first variant of *emanatory* (85a) the whole ending *-ory* is rendered unstressable. It is exceptional to treat two syllables as extrametrical. From here the derivation proceeds as normal: LLR Edge-marking puts a mark before *-ate-*, and the MSR and the Rhythm Rule derives the pattern needed. The word in (85b) is regular: only the last syllable is unstressable, and derivation proceeds as normal. In (85c) *-atory* shortening makes the syllable *-at-* unstressable in the middle of the word, and due to RLR Edge-marking there will be no post-tonic secondary stress. *-atory* shortening also works in (85d), but here LLR Edge-marking induces secondary stress on the ending *-ory*, while main stress will be on the first syllable, similarly to (85c).

(85) *émanàtory ~ èmanátory ~ émanatory ~ émanatòry*

(85a) *émanàtory*

```
Unstressable σs
                                      MSR a, c   *           *
LLR         *    *    [*    .    .               (*    *     [*    .    .
→           e    ma   nat   o    ry   →          e     ma    nat   o    ry


      *
RR    (*          *
      (*    *     [*    .    .
→     e     ma    nat   o    ry
```

---

[10] The seemingly similar ending *-ery* does not belong here, because it does not induce the same stress patterns. F84 does not mention this ending. Wells (p. 251) says that this "stress-neutral suffix is used only after a strong-vowelled syllable (*machínery*); the variant *-ry* is used otherwise (*déntistry*)."

(85b) *èmanátory*

```
Unstressable σ
                                      MSR b, c               *
RLR         *    *    *]    *    .                *    *     (*]   *    .
→           e    ma   nat   o    ry   →           e    ma    nat   o    ry


                 *                                      *
RR               (*                 IFC    *            (*
      *    *     (*]   *    .              *     *)     (*]   *    .
→     e    ma    nat   o    ry      →      e     ma     nat   o    ry
```

(85c) *émanatory*

```
Unstressable σ
-atory shortening                     MSR a, c   *
RLR         *    *    .]    *    .               (*    *     .]    *    .
→           e    ma   nat   o    ry   →          e     ma    nat   o    ry


      *
RR    (*
      (*    *     .]    *    .
→     e     ma    nat   o    ry
```

(85d) *émanatòry*

```
Unstressable σ                                                        *
-atory shortening               MSR a, c  *                *     RR   (*                *
LLR          *    *    .    [*   .        (*    *    .     [*   .     (*    *    .     [*   .
→            e    ma   nat  o    ry  →    e     ma   nat   o    ry  →  e     ma   nat   o    ry
```

H98's rules cannot derive pre-tonic secondary stresses in several cases, and variation is only possible in words ending in *-atory* (and *-ative,* which is treated in a similar manner)(cf. Section 9), though in reality this is not the only class of words that display variation in stress patterns. The treatment of the *-atory* class needs special machinery and is not in line with the rest of the rules. Furthermore, as this system does not recognise the preservation of stresses, a lot of superfluous derivation is done and information produced in earlier cycles is lost.

2.8 Summary

This chapter tested six influential theories of stress and examined whether it is possible to derive in them the existing stress patterns of three words: *academician* (2 patterns)*, dissimilarity* (3 patterns)*, emanatory* (4 patterns)*.* The results of the investigation are summarised in table (86) below. In the first half of the table ticks ✓ mark those variants that cause no problem to the theory in question. All other variants are marked by —, though in the text above attempts were made to derive these patterns as well, with slight modifications. Beside F84, who gives detailed descriptions for affixes and this way can account for patterns followed by *emanatory,* for example, the best scoring two theories are the two latest: B94 and H98, though H98 needs special rules that are different from H98's other rules to derive the four patterns of *emanatory,* while B94 scores the highest without such special constraints.

(86) **Summary**

Points of view		**LP**	**S84**	**F84**	**HV**	**B94**	**H98**
Stress patterns	*àcademícian*	✓	✓	✓	✓	✓	✓
	acàdemícian	—	—	—	✓	✓	—
	dìssimilárity	✓	—	✓	✓	✓	✓
	dissìmilárity	—	✓	—	✓	✓	—
	dìssìmilárity	—	—	—	—	✓	—
	émanàtory	—	✓	✓	—	—	✓
	èmanátory	✓	—	✓	—	✓	✓
	émanatory	—	—	✓	—	—	✓
	émanatòry	—	—	✓	✓	✓	✓
	Total out of 9	**3**	**3**	**6**	**5**	**7**	**6**
Capable of deriving	pre-tonic secondary	✓	✓	✓	✓	✓	—
	post-tonic secondary	—	*	—	✓	✓	✓
	variants	—	—	*	*	✓	*
	adjacent initial stresses	—	—	*	—	✓	—
Legend	✓ = without major problems, * = good but problematic, — = no						

The lower half of the table shows the answers to the research questions given in the introductory section of this chapter. Here a tick (✓) means that in most cases the theory makes good predictions. An asterisk (*) marks those authors whose work solves the problem somehow in most cases, but the results are not always satisfactory. An m-dash (—) means that the theory cannot solve the problem.

The most problematic issue is the question of adjacent initial stresses. This is not surprising, because adjacent stresses in general are not allowed in English, and word-internally the phenomenon is really sporadic (e.g. *elèctrícity,* cf. Appendix 7). However, word-initially stress clashes are not rare. F84 allows this with some prefixes (e.g. *mal-*), but only B94 has a device to account for this phenomenon, namely the initial degenerate foot.

Deriving more than one pattern for a certain string is also problematic. While LP do not allow this, S84 does have optional rules but these do not seem to account for variation in the place of stresses in general. F84 sometimes mentions that a certain affix has more than one pattern, but this still is not enough to account for all cases. In HV different patterns only arise as the result of Stress Enhancement, which is a very hazy rule and often gives misleading results, while it does not account for all cases of variation. B94 does allow variation, as long as the forms are well-formed. H98 can only derive multiple patterns with the help of some special rules, whose scope is limited and thus they cannot account for all cases.

While pre-tonic secondary stresses pose problems only for H98, post-tonic secondary stresses are not accounted for properly by some of the authors. In sum, B94's theory was found to be the most effective and this will provide a basis for the analyses of the following chapters.

PART II:
PRE-TONIC SECONDARY STRESS

3. INTRODUCTION TO PART II

This part of the dissertation examines pre-tonic secondary stresses, i.e. words in which there is at least one stressed syllable before the main stress. In this introduction, the general rules of secondary stress placement are looked at, following Burzio(1994) (B94). The data are taken from Wells (1990) (henceforward Wells).

First, let me make some 'technical' remarks. All subsidiary stresses (i.e. non-primary, non-zero) will be subsumed under the notion of secondary stress: the three stress levels recognised here are primary (marked by an acute accent on the vowel of the stressed syllable), secondary (marked by a grave accent) and zero stress. These are exemplified in (1), the relevant syllables are underlined.

(1) **Degrees of stress recognised**

	Primary	**Secondary**	**Zero**	**Pronunciation** (Wells)
(1a)	cànnibalístic	cànnibalístic	cànnibalístic	ˌkænɪbəˈlɪstɪk
(1b)	dìsèmbarkátion	dìsèmbarkátion	dìsèmbarkátion	ˌdɪs̥embɑːˈkeɪʃᵊn
(1c)	pénetràte	pénetràte	pénetràte	ˈpenətreɪt

As (1b) shows, the syllables marked secondary and tertiary stressed in Wells are both treated as secondary here. One difference between a secondary and a tertiary stressed syllable is that if a word with secondary–tertiary–primary pattern is followed by an initially stressed item, stress may shift. It will be the originally secondary stressed syllable that will be promoted to primary, rather than the tertiary stressed one. As in Wells tertiary stress always follows secondary stress, we can handle this problem easily: it is the first foot-head of the word in cases like (1b) that will take the primary stress if stress shift occurs. This problem is not dealt with further, since it falls out of the scope of the present dissertation.

In the analyses below, unstressed syllables may have a full or even a long vowel e.g. (1b) *disembarkation*. Though post-tonic secondary stresses are not shown in Wells, and are not a central theme in this part of the dissertation (cf. Part III for details), they will also be marked in the analysed words. I determined whether a syllable with a full vowel after the main stress is secondary stressed or not on the basis of B94's analyses (165–311). As for pre-tonic secondary stress, the following tendencies can be observed (2).

(2) **Tendencies in pre-tonic secondary stress placement**

(i) no word begins with a sequence of two unstressed syllables,
e.g. *ìmbecílity* rather than **imbecílity*

(ii) adjacent stresses are generally avoided inside words,
e.g. *ìmbecílity* rather than **imbècílity*

(iii) alternating (i.e. stressed–unstressed–stressed etc.) patterns are preferred over long sequences of unstressed syllables (i.e. lapses),
e.g. *dìsestàblishmentárian* rather than *dìsestablishmentárian*

Out of the list in (2) only (i) is obligatory. If the first or the second syllable is primary stressed, no pre-tonic secondary stress is required (e.g. *Péter, illíterate*), but in the latter case there may be one, e.g. *Chìnése*. However, if the third syllable is main stressed, the first but not the second syllable must get secondary stress (e.g. *ìdeátion*).[11] When primary stress is on the fourth or a later syllable, we expect variation. Pre-tonic secondary stress may be placed on either the first or the second syllable (e.g. *cànnibalístic ~ acàdemícian*). There might be two pre-tonic secondary stresses before the main stress (i) if the word is long enough, e.g. *dìsestàblishmentárian* or (ii) if there are adjacent stresses on the first and the second syllable, e.g. *dìsèmbarkátion.*

The central question of this discussion is what factors determine which syllables will be promoted if main stress is on the fourth syllable or later, because this is the case where there may be variation. We might expect that nothing regulates secondary stress placement here, the choice between the first or the second syllable being arbitrary. Such an expectation would be reflected by a rule similar to Halle—Vergnaud's Stress Enhancement (1987: 242), which says that either the first or the second syllable will be promoted (cf. Section 2.5 above). However, it seems that several factors may play a role in this choice, as the discussion below shows.

In Chapter 4 I summarise how the different theories (discussed in detail in the Literature review (Chapter 2)) predict the place of pre-tonic secondary stresses. These predictions are generally based on the segmental build-up (i.e. weight and number of syllables) before the primary stressed syllable. The problem of adjacent initial and non-initial stresses is also discussed here. It is not only the segmental make-up of a word that influences secondary stress placement. Since the great majority of English morphemes is relatively short (i.e. one or two syllables), almost all words that are secondary stressed are suffixed or prefixed forms.[12] Therefore, affixation may influence stressing. Suffixation and stress preservation are treated by B94 (cf. Section 4.4 below). This system is extended to prefixes and classical compound-initials in 5, where the categories of prefixes and compound-initials are adopted from Fudge (1984). In Chapter 6 I present the analysis of 737 words stressed on their fourth syllable, with the aim of checking the predictions made in Chapters 4 and 5.

[11] There are some exceptions to this like *elèctrícity*, which are discussed in 4.3 below.

[12] The only exceptions are names, which are generally treated as monomorphemes (though in the source language these may well be composed of more than one morpheme), e.g. *Cònstantinóple*, which means 'the city of Constantine'.

4. THE PLACE OF SECONDARY STRESS

Theoreticians generally treat primary and non-primary stresses in a similar way, which means these two are assigned along similar principles. This section briefly reviews pre-tonic secondary stress assignment in the theories discussed above. Here, however, the discussion is problem-centred rather than author-centred. The aim of this chapter is to show what factors influence secondary stress assignment and how these factors are incorporated into the accounts discussed, and also to point out similarities and differences in the treatments. The relevant rules are not repeated and full derivations are not given either, only those parts of derivations are shown which are strictly related to the problem being discussed. The reader is referred to the relevant sections of the Literature review (Chapter 2) for a detailed account.

4.1 The weight of syllables

Most scholars agree that the weight of syllables does not only play a role in primary stress assignment, but is also a deciding factor in the assignment of secondary stresses. This is not surprising due to the general similarity of secondary and primary stress assignment. However, in different theories syllable weight is thought to influence stressing in different ways.

Liberman—Prince (1977)(LP) encode this in the English Stress Rule (ESR), which assigns [±stress] features to all vowels in the string (except for extrametrical ones) working from right to left. The question whether a [+stress] vowel will be secondary or primary stressed is encoded in the nodes of the tree, which are labelled by the Lexical Category Prominence Rule (LCPR). There is one important factor that plays a role in the placement of [+stress] features: Retraction. Each word belongs to a certain retraction class, the selection is either morphological or idiosyncratic. In the first case the choice of retraction class depends on the ending, as in *-ology* words, which are Weak Retractors. The choice is idiosyncratic in monomorphemic words, e.g. *càtamarán,* which is a Long Retractor, and in words that do not follow the general pattern dictated by the ending, e.g. *óxigenàte,* which is also a Long Retractor, though *-ate* usually induces Strong Retraction. There are three types of retraction, and they differ in the weight and number of syllables allowed between two [+stress] marks. Retraction is built into the ESR, and the rule skips the maximum number of syllables that is allowed and is possible.

In the examples of this paragraph all [+stress] vowels are marked by an acute accent, because the ESR does not differentiate between primary and secondary stresses, the prominence relations are encoded in the tree built after the application of ESR. Some of [+stress] vowels will surface without stress, e.g. *maníput̲lá:te* will surface as *mánipula:te.* Weak Retraction allows a light syllable between stresses (as in *pyrámidóid, ellípsóid*), the Strong Mode only says that there is exactly one syllable between stresses, irrespective of its weight (e.g. *maníputláte, cóncentráte*), Long Retractors may have a light syllable and another syllable as a maximum between two stresses (e.g. *hallúcinatóry, accú:satóry*). The weight of the syllable which is marked [+stress] by the ESR is irrelevant in this case: retraction only says how many syllables can be skipped.

A similar approach is advocated in Fudge (1984)(F84), but he only adopts LP's Long Retraction (e.g. *fàrmacopéa, encỳclopédia*). The words that follow other types of retraction are treated by other mechanisms. It must be noted that due to the relative shortness of English words, for most words F84's system predicts a correct pattern: if there are two syllables before the main stresses, secondary stress will fall on the first one, if there is only one pre-tonic syllable, secondary stress is not required. One class of words that could be exceptional due to the lack of Weak and Strong Retraction is secondary stressed by the ending (e.g. *-ation* places stress two syllables away from the primary stress in *appròximátion*, which equals Strong Retraction in LP). The problematic cases for F84 would be those where the primary stress is at least on the fourth syllable, the word is a Strong or Weak Retractor and the suffix does not handle secondary stresses. Such an example would be *phenòmenólogy,* a Weak Retractor, but F84 (p. 91) says that in *-ology* words stress of the stem is often preserved: here the stress of *phenómenon.* I did not find any other examples that would be problematic for F84.

A different approach is that of Selkirk (1984)(S84), who builds syllable weight into the system by the Heavy Syllable Basic Beat Rule (HBR), which promotes all heavy syllables to the second grid level, i.e. assigns basic beats to heavy syllables. In the example in (3)(taken from S84), the x's in bold face are due to the HBR. The rightmost of these corresponds to the primary stressed syllable (promoted to level 3 by the Main Stress Rule (MSR)). S84 (p. 102) says that the final representation in (3) stands for *Tîcònderóga* /ˌtaɪˌkɒndəˈrəʊgə/, where the stress of the second syllable (which was promoted by HBR) is heard more prominent than that of the first one, because this syllable is followed by an unstressed syllable.

(3) **The HBR influences the place of secondary stress** (based on S84: 102)

Tîcònderóga

						MSR				x		Level 3
IBR, **HBR**	x	**x**		**x**			x	x		x		Level 2
DBA	x	x	x	x	x		x	x	x	x	x	Level 1
	Ti:	con	de	ro:	ga	→	Ti:	con	de	ro:	ga	

A much more straightforward example would be *tubèrculósis* (4)*,* which also demonstrates the effects of Monosyllabic Destressing (MD), which is the other rule in S84 that is concerned about syllable weight. Destressing never applies to syllables with a long vowel, and rarely does in CVC syllables closed by an obstruent (i.e. these tend to be stressed), while it often does in CVC syllables closed by a sonorant and it is obligatory in CV syllable, such as *tu-* in the example below.

(4) **The HBR and MD influence the place of secondary stress** (based on S84)

tubèrculósis

IBR,						MSR				x						x	
HBR	x	**x**		**x**			x	x		x		MD		x		x	
DBA	x	x	x	x	x		x	x	x	x	x		x	x	x	x	x
	tu	ber	cu	lo:	sis	→	tu	ber	cu	lo:	sis	→	tu	ber	cu	lo:	sis

In a similar vein, Halle—Vergnaud (1987)(HV) claim that Stress Deletion, which deletes a Line 1 asterisk over a stress well (i.e. next to a higher column of asterisks) does not apply in syllables with a branching rime (i.e. it only applies to light syllables). Their system, however, does not promote all heavy syllables in the non-cyclic stratum (where pre-tonic secondary stresses are calculated)[13]. The derivation of *tubèrculósis* in HV's system is given in (5). The rule of Stress Enhancement should apply to the second syllable in this word.

(5) **Destressing applies to light a syllable** (based on HV)

tubèrculósis

Non-cyclic stratum					Non-cyclic MSR				*		L3
			*			(.	.	.	*)		L2
(	.	.	*)			(*	*	.	*)	.	L1
*	*	*	(*)	.	Alternator	(*)	(*	*)	(*	*)	L0
tu	ber	cu	lo:	<sis>	→	tu	ber	cu	lo:	sis	

				*						*		L3
	(.	*	.	*)			(.	*	.	*)		L2
Stress Enhancement	(*	*)	(.	*)	.	SD	(.	*)	(.	*)	.	L1
2nd σ	(*)	(*	*)	(*	*)	1st σ	*	(*	*)	(*	*)	L0
→	tu	ber	cu	lo:	sis	→	tu	ber	cu	lo:	sis	

Stress Enhancement is not sensitive to syllable weight and promotes either the first or the second syllable of a word to level 2. The fact that this rule has no other condition on its application except that the syllable to be promoted should have an asterisk on level 1 is problematic here. Both the first and the second syllable could in theory undergo Enhancement, but the pattern **tùberculósis* is not attested, i.e. it is only the second, heavy syllable that is promoted.

If the word is derived, syllable weight may play a role in secondary stress assignment in a way that has not been discussed yet. This is exemplified by *revèrberátion,* derived from *revérberàte*. The Accent Rule of the cyclic stratum promotes heavy syllables to level 1. If this syllable gets the primary stress (*revérberàte*) and the resulting word is the stem of a derived item, whose primary stress will be to the right of the original primary stress (*revèrberátion*), the

[13] In the cyclic stratum the Accent Rule promotes all heavy syllables (except for final CVC syllables) to level 1, but before the tonic syllable all these stresses are erased by Conflation.

originally primary stressed syllable (whose asterisk is copied to the plane of the derived item by Stress Copy) may carry secondary stress (*revèrberátion*). The process is shown in (6).

(6) **The effects of the Accent Rule** (based on HV)

revèrberátion

Non-cyclic stratum											L3
			*						*		L2
(	.	.	*)		Stress Copy	(.	*	.	*)	.	L1
*	*	*	(*)	.		*	*	*	(*)	.	L0
re	ver	ber	a:te	<ion>	→	re	ver	ber	a:te	<ion>	

Non-cyclic				*						*		L3
MSR	(.	.	.	*)			(.	*	.	*)		L2
	(*	*	.	*)	.	Stress Enhancement	(*	*)	(.	*)	.	L1
Alternator	(*)	(*	*)	(*	*)	2^{nd} σ	(*)	(*	*)	(*	*)	L0
→	re	ver	ber	a:te	ion	→	re	ver	ber	a:te	ion	

				*		L3
	(.	*	.	*)		L2
SD	(.	*)	(.	*)	.	L1
1^{st} σ	*	(*	*)	(*	*)	L0
→	re	ver	ber	a:te	ion	

In sum, HV incorporate syllable weight in their system for destressing and the effects of the Accent Rule may be present in derived words, but maybe this is not enough, as the problems with Stress Enhancement show.

In Burzio (1994)(B94) the weight of syllables is crucial in determining the place of secondary stress, since all his constraints check the whole representation of the word and several of these refer to syllable weight (7a–e).

(7) **Constraints of B94 that refer to syllable weight and are relevant for pre-tonic secondary stresses**

(7a) **Metrical Well-formedness** (B94: 165)—inviolable
well-formed feet (non-finally): (Hσ), (Lσ), (σLσ), (φ.H)

(7b) **Primary Stress** (B94: 16)—exceptionally violable
falls on the rightmost non-weak (i.e. not (HW)) foot

(7c) **Alignment of heavy syllables** (B94: 166)(Metrical Alignment)—violable
*(σ ... H ...) where the sequence ... contains no foot boundaries

(7d) **Initial unparsed syllable** (B94: 155)—inviolable?
well-formed: #L(#(φ.H)
ill-formed: *#(φ.L) *#H(

(7e) **H_n syllable** (B94: 62, 93)—violable
counts as light when unstressed, counts as heavy when stressed

The constraint (7a) says what syllables can appear between two stresses (i.e. non-foot-heads), because unmetrified syllables are only allowed at edges, i.e. word internally a foot is immediately followed by the head of the next foot. A binary foot (Hσ)/(Lσ) allows only one syllable between two stresses, which can be either L or H, though the latter is much rarer due to the constraint (7c), which prohibits non-stressed H syllables (e.g. *èleméntary* = (è.le)(mén.ta)ry = (LL)(Hσ)W, *ìmpregnátion* = (ìm.preg)(ná:.tio)nφ = (H_nH)(Hσ)W). This corresponds to LP's Weak and Strong Retraction. A ternary foot (σLσ) allows two unstressed syllables between stresses, the first of which must be L or H_n (cf. (7e))(e.g. *àbracadábra* = (à.bra.ca)(dáb.ra) = (σLσ)(Hσ), *Àristophánic* = (À.ris.to)(phá.ni.cφ) = (σH_nσ)(σLσ)), which is the reflex of LP's Long Retraction. (7a) also says that before another foot all syllable types can be heads of feet. This means that, similarly to LP, (7a) only regulates the number and weight of skipped syllables in pre-tonic position.

The constraint about word-initial unstressed syllables (7d) is probably (though not explicitly) regarded inviolable by B94. It says that if the second syllable is stressed, an initial light syllable will be unstressed (e.g. *banána* = ba(ná:.na) = L(HL)), while an initial heavy syllable will be stressed (e.g. *prò:dúction* = (φ.prò:)(dúc.tio)nφ = (φ.H)(Hσ)W). As we already mentioned, in B94 we find several words parsed as #CVC(= #H(, e.g. *attáinable* = at(tái.na)ble (B94: 235), i.e. it is not clear whether (7d) is a Metrical Well-formedness constraint (i.e. inviolable), or an Alignment constraint (i.e. violable). (7d) is similar to the destressing rules of S84 and HV, which destress a heavy syllable only in some special cases.

(7e) says that syllables closed by a sonorant or *s* may behave as light when unstressed, i.e. they do not necessarily attract stress. This behaviour of H_n syllables is also noted in Selkirk (1984: 127) and Halle—Vergnaud (1987: 257), who both claim that in words like *mómentary* a H_n syllable is skipped (cf. *trajéctory,* where the H syllable bears stress). In S84 and HV, however, the scope of rules concerned with H_n syllables is much narrower than B94's (7e). S84 and HV limit this behaviour to words with a sequence of three basic-beated syllables (S84), as in *Háckensack* or to words composed of three syllables (HV) (e.g. *mómentary,* where *-ary* counts as monosyllabic), and in both cases the middle syllable must be H_n. In B94 there is no such restriction on the place of H_n syllables, though it is the middle of a ternary foot (σH_nσ) where its effects are the easiest to see. The typical ternary foot should have a light medial, but H_n syllables in this position can also form a well-formed foot (e.g. *répertory* = (ré.per.to)ry). Another place where H_n must be light is word-initially, if the syllable is unstressed, e.g. *dispósal* = dis(pó.sa)lφ.

Let us examine words in which the primary stress is on the fourth syllable and see what feet may emerge according to B94's constraints in (7a). We might expect that if a word has the syllable structure #HHσ before the main stressed fourth syllable (8a), the second syllable must be a foot-head because *(σHσ) feet are excluded. As an initial H syllable cannot remain unparsed, another, right-headed foot is built over the first syllable. With #LHL (8b) the choice is obvious: *(σHσ) feet are not allowed, so only L(Hσ) is possible, where the initial L syllable must remain unparsed. If, however, the word begins with #LLσ or #HLσ (8c–d), we can expect both binary L(Lσ) / H(Lσ) or ternary (LLσ) / (HLσ) feet. These expectations are summarised in (9).

(8) **Syllable weight and possible parsings before the main stress** (based on B94)

	Syllables	Possible feet	Example
(8a)	#HHσ	#(ϕ.H)(Hσ)	(ϕ.nòn)(àl.co)hólic
(8b)	#LHσ	#L(Hσ)	do(mès.ti)cá:tion
(8c)	#HLσ	#(HLσ) / #(ϕ.H)(Lσ)	(pràc.ti.ca)bílity, (ϕ.prè:)(fi.gu)rá:tion
(8d)	#LLσ	#(LLσ) / #L(Lσ)	(à.ca.de)(mí.cian, a(cà.de)(mícian

In sum, theoreticians generally agree that syllable weight influences the place of secondary stress somehow. Liberman—Prince (1977), Selkirk (1984), Fudge (1984), Halle—Vergnaud (1987) and Burzio (1994) all remark on the weight of unstressed syllables, which tend to be light or H_n. Selkirk (1984), Fudge (1984) and Burzio (1994) express that heavy syllables tend to be aligned with stresses. Burzio (1994) also claims that a word-initial heavy syllable must be stressed. Halle (1998) does not consider syllable weight as a deciding factor in pre-tonic secondary stress placement.

4.2 Rhythm: an alternating pattern

As Fudge (1984: 31) says "some alternation of relatively stressed and relatively unstressed syllables is the most natural situation for English". This can be called the Rhythmic Principle. All theories discussed here encode this tendency into their system to some degree.

In Liberman—Prince (1977)(LP) the labelled binary branching tree ensures that no adjacent stresses should occur (even if ESR generates adjacent [+stress] marks) (10). On the surface only those syllables are regarded as stressed that are [+stress] and have a corresponding *strong* node in the tree. This mechanism is discussed in detail in the Literature review (Section 2.2), I repeat only the trees here.

(10) **LP's tree over adjacent [+stress] vowels**

(10a) word-finally

...[+stress]$_1$ [+stress]$_2$#

s w

(10b) word-internally

...[+stress]$_1$ [+stress]$_2$ [-stress] ...#

w s w

The rule of Foot-Formation eliminates long sequences of unstressed syllables: it creates two feet from a sequence of at least four syllables. The Retraction Rules (which are collapsed into the ESR) determine what type of alternation occurs, i.e. the number of unstressed syllables between two stresses, which is maximally two.

As we saw in 4.1 above, Fudge (1984)(F84) "inherits" Long Retraction from LP, thus the number of unstressed syllables is again maximised in two. F84 does not reject the existence of adjacent stresses, in his examples these occur regularly and not only word-initially (e.g. p. 81 *éxcòrcìsm, vèntríloquìst, Bétlehèmite*).

In Selkirk (1984: 12) the Principle of Rhythmic Alternation expresses the tendency towards alternation. It says "between two successive strong beats there intervenes at least one and at most two weak beats". Governed by this principle, Beat Addition promotes every second syllable (hence the alternating pattern), while Beat Movement or some other rule removes occasional stress-clashes. The Anti-Lapse Filter prohibits lapses (sequences of unstressed syllables) in the cyclic stratum. The work of these is illustrated in (11). In the cyclic stratum Beat Addition (BA) must apply (it introduces x's in bold face) because otherwise the representation would violate the Anti-Lapse Filter. After the cyclic rules, the non-cyclic Abracadabra Rule eliminates the clash between the basic beats over the first and the second syllable, but creates a lapse, i.e. a ternary foot.

(11) **Clashes and lapses in S84**

àbracadábra

Cyclic stratum						**Non-cyclic stratum**					
MSR				x						x	
IBR, **BA**	x	**x**		**x**		Abracadabra	x			x	
DBA	x	x	x	x	x		x	x	x	x	x
	a	bra	ca	da	bra	→	a	bra	ca	da	bra

In Halle—Vergnaud (1987) the Alternator, as its name shows, assigns alternating rhythm to the syllables preceding the primary stressed syllable, cf. *Apalachicola* in (12). After the Alternator, Stress Enhancement promotes the first syllable (HV: 254), because it has more stress than the third syllable (Wells also gives this word as /ˌæpəlætʃɪˈkəʊlə/, i.e. without stress on the third syllable, but a full vowel).

(12) **The Alternator** (based on HV)

Àpalàchicóla

				*							*	
(.	.	.	.	*)			(*	.	*	.	*)	
*	*	*	*	(*)	.	Alt.	(*	*)	(*	*)	(*	*)
A	pa	la	chi	co:	<la>	→	A	pa	la	chi	co:	la

	*				*	
Stress Enhancement	(*)	(.	*	.	*)	
	(*	*)	(*	*)	(*	*)
→	A	pa	la	chi	co:	la

This rhythm may be modified by Stress Copy, which copies stresses from earlier cycles into the grid just before the application of the Alternator. As a result, clashes may appear in the grid, which are resolved by Stress Deletion (if the offending syllable is light), though monosyllabic feet are allowed in their system (13).

(13) **The Alternator and Stress Copy** (based on HV)

àcademícian

Non-cyclic stratum

```
                              *                                 *
Stress Copy      (*    *    *    *)                 (*    *    *    *)   *
                  *    *    *    (*   *)   *   Alt.  (*)  (*)  (*)  (*)  (*   *)
→                 a    ca   de   mi   ci   an  →     a    ca   de   mi   ci   an

Non-cyclic                  *                                              *
MSR         (.    .    .    *)           Stress                  (*    .    .    *)
            (*    *    *    *)    *      Enhancement 1st σ       (*)   (*   *    *)    *
            (*)   (*)  (*)  (*)   (*   *)                        (*)   (*   *)   (*)   (*   *)
→           a     ca   de   mi    ci   an  →                     a     ca   de   mi    ci   an

                                   *
Stress                    (*    .    .    *)
Deletion 2nd, 3rd, 5th σ  (*)   (.   .    *)
Reduction                 (*)   *    *    (*)   *    *
→                         a     ca   de   mi    ci   an
```

Halle (1998) mechanically assigns secondary stress to every odd-numbered syllable by Iterative Foot Construction (IFC), which gives out an alternating rhythm (as in *Àpalàchicóla*)(14a) but in cases where secondary stress is on an even-numbered syllable (as in *ecclèsiástic* in 14b), it does not reflect reality.

(14) **Iterative Foot Construction in H98**

(14a) *Àpalàchicóla*

```
                    *                                       *
                    (*             *          *             (*
*    *    *    *    (*]   *   IFC  *     *)   *     *)      (*]   *
A    pa   la   chi  co:   la  →    A     pa   la    chi     co:   la
```

(14b) *ecclèsiástic*—underivable

```
                 *                                  *
                 (*               *          *      (*
*    *      *    (*    *    IFC   *    *)    *      (*    *
e    ccle   si   as    tic  →     e    ccle  si     as    tic
```


Burzio (1994) claims that there are no monosyllabic feet, i.e. stress-clashes cannot arise. There is one exception, though, adjacent stresses are allowed on the first and the second syllable, because an initial heavy syllable may be the head of a right-headed foot, as in *dìssímilar* = (ϕ.H)(LLL)W. Lapses are avoided by claiming that syllables may be left unparsed only at word edges and maximising the length of well-formed feet in three syllables.

As we have seen, scholars agree (with the exception of Halle (1998)) that syllables with pre-tonic secondary stress are separated from the following stressed syllable by one or two syllables. Adjacent stresses (with the exception of F84 and B94) and more than two unstressed syllables are generally treated as ill-formed or dispreferred. As a result, in words that are primary stressed on their fourth syllable, secondary stress can appear either on the first syllable (two unstressed syllables follow) or on the second one (one unstressed syllable follows). In the latter case the initial syllable should ideally be light.

4.3 Pre-tonic adjacent stresses

As the "rhythmic principle" is thought to be one of the most important driving forces in English stressing, adjacent stresses are often not tolerated by theories of stress. The tree-building algorithm of Liberman—Prince (1977) cannot generate adjacent stresses (cf. (10) above). Selkirk (1984) eliminates stress clashes (i.e. adjacent stresses) by Beat Movement, the Abracadabra Rule or Destressing (cf. (11) above). Halle (1998)'s secondary stress rule constructs only binary constituents (as shown in (14) above).

Fudge (1984) gives a list of monosyllabic autostressed prefixes, which are always stressed, irrespective of whether the following stem syllable bears stress or not. This gives rise to adjacent initial stresses, as in *<u>mìs</u>spéll*. Furthermore, several of F84's examples that do not contain an autostressed prefix (such as *vèntríloquìst*) are given with adjacent initial stress. It is not discussed why these syllables are stressed.

Initial stress clash is also recognised by Burzio (1994: 155). A degenerate, right-headed foot (ϕ.H) can appear immediately before a stressed syllable at the beginning of words. The head of this degenerate foot must be a heavy syllable (H or H_n), as in *Chìnése* = (ø.Chì:)(né:.se) = (ϕ.H)(HW) and *mìspríntV* = (ϕ.mìs)(prín.tϕ) = (ϕ.H_n)(H_nW). Stress clashes are not tolerated otherwise, words like *elèctrícity* (see Appendix 7 for a list of such words) are exceptional. B94 (p. 99) claims that if the secondary stress is on the second syllable, which must be heavy, and the third syllable is also stressed, and the first syllable is composed of a single short vowel, the word will have a foot similar to (ϕ.H). This foot will be right-headed, i.e. *elèctrícity* = (e.lèc)(trí.ci.ty) = (LH)(LLL). This solution is not a very elegant one, given that feet are generally left-headed and words with left-headed (LH) feet also exist, even if the first syllable is an onsetless short vowel, e.g. *èlectrícity* = (è.lec)(trí.city) = (LH)(LLL). In words like *Hàlicàrnássus* the syllable *-ca:r-* is not regarded as stressed (in line with Wells /ˌhælɪkɑːˈnæsəs/) and a ternary foot (LLH) emerges. This foot violates the Alignment of heavy syllables (see (7c) above), but this constraint is violable.

Stress clashes are treated as exceptional in Halle—Vergnaud (1987: 233). In their system monosyllabic feet exist, but the Alternator builds binary constituents (as in (12) above).

Words like *Hàlicàrnássus* and *ìncàrnátion* are exceptions to a cyclic rule, namely Conflation, which is the last move of the Main Stress Rule and eliminates all level 1 asterisks except for that of the primary stressed syllable. Since Conflation (MSRg) does not take place, these asterisks are kept. As a result, the Alternator in the non-cyclic stratum works vacuously, it only incorporates the last, extrametrical syllable into the grid, but does not modify level 1. These words should also be exceptions to Shortening, which normally shortens vowels adjacent to a stronger stress, and Stress Deletion eliminates the corresponding line 1 asterisk (as in (13) above). As Shortening does not happen, the vowel of *-car-* is not shortened and its line 1 grid mark is not deleted. The derivation of *ìncàrnátion,* which contains two stress clashes, is given in (15).

(15) **Adjacent stresses in HV: exception to Conflation** (based on HV: 233)

Cyclic stratum					**Non-cyclic stratum**				
					Non-cyclic MSR			*	
MSR, no Conflation			*			(.	.	*)	
Accent Rule	(*	*	*)			(*	*	*)	
	(*)	(*)	(*)	.	Alternator	(*)	(*)	(*	*)
→	in	ca:r	na:	<tion>	→	in	ca:r	na:	tion

			*	
Stress Enhancement	(*	.	*)	
1st syllable	(*)	(*	*)	
	(*)	(*)	(*	*)
→	in	ca:r	na:	tion

Thus HV treat initial and non-initial stress-clashes in a uniform manner: these are exceptions to Conflation, Shortening over Stress Well (if the vowel is long) and Stress Deletion. Their account does not indicate that initial clashes are much more frequent than word-internal clashes.

In sum, adjacent stresses are generally regarded ill-formed or exceptional by theoreticians. If tolerated, it is generally the first and the second syllable that can be stressed at the same time, but later clashes are regarded ill-formed. This is in line with Wells' analyses: his dictionary gives a large amount of words with the pattern secondary–tertiary at the beginning, but internal clashes are rare. On the issue of the treatment of adjacent stresses in different dictionaries see the discussion in Section 8.3 also.

4.4 Stress preservation and affixation

The tendency that morphologically related words sound similar is also reflected in their stressing: their stressed syllables tend to be the same, but the degree to which these are stressed may be different, e.g. *hallúcinàte–hallùcinátion–hallùcinátory~hallúcinatory.* However, this similarity is not always present, e.g. *hàllucínogene.* This preservation of stresses is usually included in

stress theories: the stressed syllables of the stem somehow preserve these stresses in the derived item as well.

Though the metrical tree is deleted at the beginning of every cycle by Deforestation in Liberman—Prince (1977)(LP), the [+stress] marks previously assigned by the ESR are kept. These may be labelled *strong* in the tree, and thus become stressed even in the derived word. In the derivation of *èmanátory* (18)*,* for example, the stem is *émanàte,* i.e. the first and the third syllables are [+stress]. The ESR first stresses *-or-*. As the word is a Long Retractor, the ESR skips two syllables *-manat-* and stresses the initial syllable. However, the stress on *-ate-* is preserved from the previous cycle, and finally this will be the primary stressed syllable of the whole word.

(18) **Stress preservation in LP**

Cycle 2

èmanátory

e	man	ate	or	y	
+	-	+			Deforestation
+	-	+	+	(-)	ESR (Long Retraction)
s	w	s	w		LCPR
w		s			

A rule similar to Deforestation (called Stress Deletion) eliminates all structure and stresses of the previous cycle in Halle (1998)(H98), thus all information is lost, contrary to LP's system. This means that this account does not recognise preservation of stresses. Stress Deletion, together with the mechanical secondary stress assignment (IFC), often yields ill-formed structures, as in (18).

(18) **Stress Deletion in H98**

manìpulátion—underivable

Cycle 1						**Cycle 2**					
RR		*									
MSR, exc. to Condition K		(*		*							
LLR Edge-marking	*	(*	*	[*		Stress Deletion					
	ma	ni	pul	ate		→	ma	ni	pul	ate	ion

RR				*						*	
MSR				(*		IFC	*			(*	
RRL Edge-marking	*	*	*	(*]	*		*	*)	*	(*]	*
→	ma	ni	pul	ate	ion	→	*ma	ni	pul	ate	ion

Halle—Vergnaud (1987) start the derivation of each word on a separate metrical plane, i.e. in this respect the system works in a similar manner to H98's. In HV, however, previous stresses are copied to the stress plane of the derived item by the Stress Copy Rule, which is the first rule of the non-cyclic stratum. Its work has already been demonstrated in (13) above.

A different approach is taken by Selkirk (1984): the grid of the derived item is built on the grid of the stem, as if it was continued, i.e. all stem stresses are incorporated. These, naturally, may be eliminated by later rules if clashes emerge. The process is shown by the derivation of *dissìmilárity* in (18). It must be noted that the total incorporation of the previous tree may block the generation of certain patterns, which would be possible if a new grid were built for the derived item. This issue is discussed in detail in the Literature review (Section 2.3).

(18) **Stress preservation in S84**

dissìmilárity

Cycle 1

MSR		x				
IBR		x				
DBA		x	x	x		
→	[dis	[si	mi	<lar>]]	i	ty]

Cycle 2

MSR (vac.)		x				
IBR	x	x				
DBA	x	x	x	x		
→	[dis	si	mi	<lar>]]	i	ty]

Cycle 3

				x		
MSR		x		x		
BA	x	x		x		
DBA	x	x	x	x	x	x
→	dis	si	mi	la	ri	<ty>

Non-cyclic

BM blocked by Montana						
Destressing optional and				x		
"seldom"		x		x		
Minimisation	x	x	x	x	x	x
→	dis	si	mi	la	ri	ty

Fudge (1984)(F84) is generally not concerned with the preservation of stem stresses, though on page 91, for example, in the discussion of *-ology* he says that secondary stress "may also be affected by the place of main stress in words related to the first element of the compound", as in *phenòmenólogy–phenómenon.* The emphasis is on the behaviour of affixes in F84 and he claims that affixes tend to behave in the same way. Suffixes, for example, induce one or two stress patterns in their stem and their pronunciation is generally the same. For example, *-ation* (F84: 61) is always pronounced /eɪʃən/, always carries the primary stress on its first syllable and the stem is stressed two syllables away from the ending, as in *manipulátion, rèconcìliátion, dèmonstrátion.* The tendency that prefixes and classical compound-initials behave similarly in all their occurrences is also noted in F84 (e.g. *mis-* is always secondary stressed, as in *mìsspénd, mìspronóunce*). This means that F84 emphasises the preservation of stresses/pronunciation of affixes rather than that of stems.

These two kinds of preservation, i.e. stress preservation of stems and that of suffixes, are both included in Burzio (1994), and are treated by the constraint of Metrical Consistency, which applies to both stems and suffixes. In Burzio (1996) this consistency is called Anti-Allomorphy, which says that related items tend to be as similar as possible. This is reflected in

structure: stems tend to have the same parsing in all their occurrences as long as they are composed of well-formed feet (e.g. *óxigen* = (ó.xi.ge)ne and *óxigenàte* = (ó.xi.ge)(nà.te), though the non-occurring *o(xí.ge)(nà.te) would also be well-formed). As for suffixes, B94 claims that these have a pre-determined parsing, which is kept if attached to a stem, e.g. *-ic* always has the structure i.cϕ). These pre-determined parsings reflect the behaviour of each affix. For example, *-ic* will always be stressed on the syllable immediately preceding it (with few exceptions[14] such as *Àrabic*), e.g. *àthlétic, encỳclopédic.* In B94 this behaviour follows from its structure: it is only a ternary (σLσ) foot that can be formed from i.cϕ), due to the lack of (LW) feet. Metrical Consistency is overridden by Metrical Well-formedness: though the stem is *combíne,* the derived item *combination* will have the pattern *còmbinátion* rather than **combìnátion,* because the latter would contain a monosyllabic foot, which is not allowed. However, Metrical Consistency overrides Metrical Alignment, which, for example, would dictate the pattern *o(xí.ge)(nà.te), due to Strong Retraction.

The influence of prefixes on secondary stress is not discussed in B94, though F84 examines them in detail. The next chapter (Chapter 5) is devoted to this problem: it proposes that the behaviour of prefixes and classical compound-initials can also be reflected in a pre-determined parsing, i.e. it extends B94's treatment of suffixes to prefixes as well.

4.5 Summary

This section summarises how the factors discussed above are expected to influence the place of secondary stress in words whose primary stress is on the fourth syllable, because this class of words will be analysed in Chapter 6. The expectations are listed in (19).

(19) **Pre-tonic secondary stress in #σσσσ́ words: expectations**

(19a) heavy syllables are more likely to be stressed than light ones
(19b) an initial heavy syllable will carry secondary stress
(19c) an initial light syllable may be unstressed
(19d) either the first or the second syllable will be secondary stressed
(19e) it is impossible that the first three syllables are unstressed
(19f) the third syllable will never carry secondary stress
(19g) it is possible that both the first and the second syllable carry secondary stress
(19h) H_n syllables may be unstressed despite their apparent heaviness
(19i) stem stresses are to be preserved if preservation does not result in a stress clash
(19j) affixation may influence the place of secondary stress

[14] F84 (p. 74) lists 12 exceptional words out of which 6 are nouns, though *-ic* typically forms adjectives.

5. PREFIXES AND CLASSICAL COMPOUNDS

This section examines the influence of prefixes (e.g. *dis-, in-, un-*) and classical (Greek or Latin) compound-initials (e.g. *mono-, pseudo-*) on the stressing of words. These two categories can be treated together, because the borderline between them is not clear-cut (F84:139) and because both types comprise bound morphemes. F84's list and classification of prefixes (pp. 169–188) and classical compound-initials (pp. 150–163) is accepted as a starting point. Some assumptions of F84 are not questioned: an example is whether *de-* in *defeat* is really a prefix in present day English. In the case of classical compound-initials, new items are added to the original list (for examples see table (48)) and the classification of some items is questioned on the basis of data obtained from Wells.

The aim of this discussion is to investigate how the behaviour of prefixes and classical compound-initials can be reflected in their metrical structure. B94 claims that suffixes have inherent metrical structure, which explains their influence on stress. Prefixes are not examined by B94. The central question of this chapter is how and to what extent B94's analysis can be extended to prefixes and classical compound-initials. B94's basic assumptions are used but not explained here.

F84 arranges prefixes and classical compound-initials into subgroups based on their influence on the stressing of words (20).

(20) **Factors that are examined by F84** (pp. 138–192)

(i) whether the morpheme in question is capable of carrying primary word stress,
e.g. *isóchronous* vs. *ìntracéllular*

(ii) whether it is attached to free stems, e.g. *unwánted* vs. *àpostólic*

(iii) whether the morpheme has a constant meaning, e.g. *unéarth* vs. *confíne*

(iv) whether the final consonant of the morpheme is lost if it is attached to a stem starting with the same consonant,
e.g. *ùnnátural* /ˌʌnˈnætʃ^{ə}rəl/ vs. *connéct* /kəˈnekt/

(v) whether the final vowel of the morpheme is long,
(e.g. *hòmotáxis* /ˌhəʊməʊˈtæksɪʃ/ vs. *homógonous* /həˈmɒgənəs/)

Based on these data word-initial bound morphemes are arranged into groups (21). There are stress-neutral or level 2 (21a) and stress-repellent or level 1 prefixes (21b). Despite their name, stress-repellent prefixes may be stressed in certain cases. Classical compound-initials also form two groups: the largely "prepositional or adverbial" first elements of Type 1 compounds attach to free stems (21c), while Type 2 compounds are made up of two bound elements (21d). Certain forms follow more than one pattern ((21a-d)), which are called mixed (21e). In the following analysis mixed prefixes and compound-initials are replaced by two or more forms in the lexicon with the same spelling but different properties (e.g. *pseudo-*$_1$: Type 1 compound-initial, *pseudo-*$_2$: Type 2 compound-initial). The classes in (21) will be discussed in detail in Sections 5.1 and 5.2, and some modifications will be suggested.

(21) **Fudge's classification of prefixes and classical compound-initials** (F84: 38–192)

Type	Accepts main stress	Attached to free form	Has constant meaning	Final -C lost	Final -V long	Example
(21a) **Stress-neutral**	no	yes	yes	no		*ùnnátural*
(21b) **Stress-repellent**	yes, only when placed by suffix	rarely	no	yes		*corróde* *córrelàte*
(21c) **Compound 1**	no	yes	yes		yes	*pseùdo-scièntífic*
(21d) **Compound 2**	yes	no	yes		no	*pseúdonỳm*
(21e) **Mixed**	one form follows more than one pattern					*dìsagrée,* *díssident*

Before the above classes of prefixes and compound-initials are discussed, B94's treatment of suffixes must be reviewed, because we will examine prefixes along the same lines. B94 claims that "every morpheme must be as metrically consistent as possible" (p. 228), i.e. the fewer allomorphs a certain morpheme has, the better. This is not only true for root words, but also for affixes. However, since B94 only discusses suffixes in detail, therefore in this section we only review the behaviour of suffixed words. First of all, stem+suffix combinations must be metrically well-formed. If the combination of the stem and the suffix yields an ill-formed word, the stress on the stem will leave its original host syllable, i.e. in this special case a new allomorph of the stem will arise. In B94 this behaviour is reflected by the fact that suffixes have pre-determined metrical structures, i.e. they are divided into syllables and have foot boundaries already in the lexicon. This pre-determined structure is responsible for their relative unchangeability and their constant influence on the stem. (22) illustrates this process.

(22) **A suffix with pre-determined metrical structure** (based on B94: 246)

hístory → *históric*

hís.to.ry + i.cϕ) → hís.to.ri.cϕ)

(22a) *(hís.to)(rì.cϕ)#

(22b) *(hís.to.ri.cϕ)#

(22c) his(tó.ri.cϕ)

The suffix *-ic* places the main stress on the immediately preceding syllable, irrespective of the weight of that syllable. This suffix has the structure i.cϕ), which 'preserves' the structure of the suffix i.ca)lϕ (B96: 132). As a result, the stems preceding this pair of affixes will behave in the same way, e.g. *ànatómic—ànatómical.* The structure of the suffix ensures that the stress will always fall on the preceding syllable. The sequence LW) at the end of the word can only be part of a ternary foot, since (Lσ) feet arise word-finally only if the foot in question is the only foot in the word, as in *hónest* (hó.nes)tϕ. Therefore, the structure in (22a) is ill-formed. Furthermore, feet of four syllables are not part of the foot inventory, which makes (22b) ill-formed. Since the stem will always consist of at least one syllable, a ternary foot will be constructed (22c).

Other suffixes work in a similar fashion. (23) shows examples of how structure can reflect behaviour. The different classes of suffixes are taken from F84, the analyses are based on B94. Typical suffixes are chosen, with unproblematic examples. For problematic cases see B94 (pp. 199–312).

(23) **Suffixes and their pre-determined structure**

Class	Influence on stress	Example	Example words
Stress-neutral	no influence	*-ed* = e)dϕ W)W	(mé.di)(tà.te) → (mé.di)(tà.te)dϕ sup(pór.tϕ) → sup(pór.te)dϕ
Autostressed[15]	attracts main stress	*-áde* = (á.de) (σ́ W)	(lé.mo)nϕ → (lè.mo)(ná.de)
Pre-stressed 1	main stress on the immediately preceding syllable	*-ic* = i.cϕ) L σ)	(hís.to)ry → his(tó.ri.cϕ) (á.ce)(tò.ne) → (à.ce)(tó.ni.cϕ)
Pre-stressed 2	main stress 2 syllables away	*-ate* = (a.te) (H W)	(dé.mon)(strà.te)
Pre-stressed 1/2	main stress on the immediately preceding H syllable, otherwise 2 syllables away	*-ence* = en)ce σ)W	(ín.ter)(fè.re) → (ìn.ter)(fé.ren)ce (díf.fe.rϕ) → (díf.fe.ren)ce
Pre-stressed 2/3	main stress on the H syllable that is the 2nd from the ending, otherwise 3 syllables away	*-scope* = (sco.pe) (σ W)	as(tíg.mo)(scò.pe) (sí.de.ro)(scò.pe)

5.1 The proposed representation of prefixes

This section investigates how the behaviour of prefixes can be reflected in their pre-determined structure. This issue is not touched upon by B94; the discussion below (and in Section 5.2) is an extension of his theory. The subsections of 5.1 correspond to F84's grouping of prefixes: Subsection 5.1.1 deals with stress-neutral prefixes, while 5.1.2 discusses stress-repellent prefixes. It must be noted that there is a third category of prefixes, which is not explicitly declared in F84. The prefixes that belong here appear in those nouns that have a verbal counterpart with a different stress pattern, e.g. *ímpòrt*$_N$ ~ *ìmpórt*$_V$. In the noun the prefix is primary stressed, though there is no ending, i.e. it is not stress-repellent. It cannot be stress-neutral either, because stress-neutral prefixes never get the main stress. These are discussed in 5.1.3.

[15] This class is treated as exceptional in B94 (p. 216). In these words the primary stress falls on the final weak foot, which is not allowed in regular cases if there is another foot in the word, e.g. irregular *lèmonáde* = (lè.mo)(ná.de), c.f. regular *démonstràte* = (dé.mon)(strà.te). I indicate this irregularity by having a stress-mark in the Example column in the pre-determined structure of the ending.

5.1.1 Stress-neutral prefixes

The prefixes that belong to this class are attached to free stems and usually have a constant meaning.[16] The stress of the stem is not changed after prefixation and main stress never falls on the prefix, as the prefix is not part of the Stressable Portion of the word. F84's list is reproduced in (24), in which all prefixes are monosyllabic. In the group of stress-neutral prefixes, two subgroups can be distinguished, which are not given names in F84. The first group, which I will call 'dependent prefixes' (cf. 5.1.1.1) may or may not be secondary stressed, depending on the following stem. The prefixes of the second group, called 'autostressed prefixes' here (cf. 5.1.1.2), are always secondary stressed, irrespective of the stress pattern of the following stem.

(24) **Stress-neutral prefixes** (based on F84: 165, 169–188)

Groups	Prefix	Example	Prefix	Example	Prefix	Example
Dependent	a-$_{\text{Adv}}$	*ahéad*	be- $_{\text{V/Adv}}$	*befríend*	co-$_{\text{together}}$	*cò-wórker*
	de-$_{\text{get rid of}}$	*dèbúg*	em-/en-$_{\text{caus.}}$	*encámp*	in- …$_{\text{neg.}}$	*ìncorréct*
	un- $_{\text{neg.}}$	*ùnéarth*				
Autostressed	a-/an-$_{\text{neg.}}$	*àmóral*	ex-$_{\text{formerly}}$	*èx-húsband*	mal- $_{\text{badly}}$	*màlfúnction*
	mis-$_{\text{wrongly}}$	*mìs-spéll /sˈs/*	re- $_{\text{again}}$	*rèappéar*		

The monosyllabicity of these prefixes deserves a note here. In F84's longer list (pp. 180, 186), but not on p. 165, there are two disyllabic stress-neutral prefixes: *inter-* and *super-*. These are considered to be ambiguous: they either act as prefixes or as compound-initials. The prefix *inter-* is either a stress-neutral prepositional element being autostressed on the first syllable as in *ìntergaláctic,* or a genuine stress-repellent prefix in verbs, e.g. *ìntervéne* (F84: 156). In a similar manner, the prefix *super-* is either stress-neutral and behaves like a classical compound-initial, e.g. *sùpernúmerary*, or is a genuine stress-repellent prefix in verbs, e.g. *sùpervéne* (F84: 186–187). In fact, F84 (pp. 141, 187) gives *súpermàn* as the typical example of both Type 1 classical compound initials and stress-neutral prefixes. Similarly, *intergalactic* is a compound (F84: 156) and as a derived word with a prepositional element (F84: 180) at the same time. It is not clear why these items are not subsumed under classical compound-initials (cf. Section 5.2), though they seem to pattern with compound-initials, as the comparison of (25a) and (25b) shows.

(25) **The behaviour of the prepositional elements *inter-*, *super-***

Stem	**a) Prepositional elements**		**b) Analogues**	
	inter-	***super-***	**stress-neutral prefix**	**Compound 1**
#σ#	*íntersèx*	*súpermàn*	*ùnlóose ~ unlóose*	*équinòx*
#σ́ σ …	*ìnterplánetary*	*sùpernúmerary*	*ùnéven ~ unéven*	*èquidístant*
#σ σ́ …	*ìnter-galáctic*	*sùperabúndant*	*ùnforgéttable*	*èquipoténtial*

[16] These are the prefixes generally referred to as Level 2 prefixes. On the status of *in-* see Section 5.1.1.1. In some cases the stems are bound forms, e.g. *àléxia*, but this fact does not influence the discussion below.

5.1.1.1 Dependent prefixes

These prefixes may be secondary stressed for rhythmic reasons according to F84. B94 (pp. 221–224) examines a similar kind of secondary stress in stem+suffix combinations, since he does not include prefixes in his account. He claims that rhythmic secondary stress occurs in the stem when the combination of stem and suffix would yield an ill-formed structure (viz. adjacent major stresses). Consequently, the stress should leave its original host syllable and move to the left. (26) shows this in the word *clandestinity*. There are two suffixes in the word: *-ine* is pre-stressed 1/2 (F84: 78), i.e. it has the structure σ)W, like *-ence* in (23) above; and *-ity* is pre-stressed 1 (ibid. 83), i.e. it has the structure σW), like *-ic* in (23) above, whose first vowel replaces the null segment at the end of the stem. (26b) shows that the simple concatenation of the suffixes would result in an ill-formed structure: a (Lσ) foot at the end of the word. In (26c) the final foot is 'repaired', but the preceding foot becomes ill-formed now, since no monosyllabic feet are allowed in this system. The correct result is obtained if the final form does not preserve the stress of the stem and a bisyllabic foot is created at the beginning of the word (26d).

(26) **Rhythmic secondary stress** (based on B94: 223)

clandéstine → *clàndestínity*

(26a) clandest + i)ne → clan(dés.ti)ne

(26b) clan(dés.ti)ne + i.ty) → clan(dés.ti)ni.ty) → *clan(dès.ti)(ní.ty)

(26c) *clan(dès)(tí.ni.ty)

(26d) (clàn.des)(tí.ni.ty)

Let us now extend B94's treatment to prefixes. All the prefixes we are concerned with now are monosyllabic. We first examine the case when the stem is stressed on its second syllable. As a result of prefixation, there will be two unparsed syllables at the beginning of the word. In this position, however, only one syllable may be left unparsed. To avoid this ill-formedness, a foot is built and the prefix gets secondary stress, as *impertúrbable* shows in (27).

(27) **Rhythmic secondary stress on a prefix**

pertúrbable → *ìmpertúrbable*

(27a) im + per(túr.ba)ble → *imper(túr.ba)ble

(27b) (ìm.per)(túr.ba)ble

In this case, the initial syllable will always get secondary stress, irrespective of its weight, i.e. the foot can either be (Lσ) or (Hσ) in theory. It seems, however, that in this configuration practically all prefixes are heavy: no prefix that constitutes a light syllable appears before these stems (28)[17].

[17] *a-* and *be-* are the only stress-neutral prefixes that end in a short vowel. In the case of *a-* two prefixes can be distinguished: an adverb-forming prefix (*adrift*) and a negative prefix (*amorphous, asymmetrical*). The latter one is almost always pronounced long, possibly for the emphasis of the contrast. There are sporadic example for lax

(28) **Rhythmic secondary stress on the dependent prefix**

(28a) *<u>à</u>symmétrical* = (à:.sym)(mé.tri.ca)lϕ

(28b) *<u>cò</u>exíst* = (cò:.e)(xís.tϕ)

(28c) *<u>ùn</u>grammátical* = (ùn.gram)(má.ti.ca)lϕ

Now let us turn to words in which the stem is initially stressed. In these cases, prefixation only results in one unparsed syllable before the following stressed syllable. Now the weight of the initial (i.e. prefixal) syllable influences the stress pattern. If the monosyllabic prefix is light, it should be unstressed (29a). If the initial syllable is heavy, it may become the head of a right-headed initial foot and thus be secondary stressed (29b)(cf. B94: 99). A third possibility is when the initial heavy syllable remains unparsed (29c). This heaviness may be due to a long vowel (29c.i); or a consonant after the short vowel, which is a sonorant in all cases since no dependent prefix ends in an obstruent (29c.ii). The third pattern (29c) will be discussed in detail below.

(29) **Stress is on the first syllable of the stem+dependent prefix**

(29a)	*<u>a</u>dríft* = a(dríf.tϕ), *<u>a</u>mórphous* = a(mó:r.phou)sϕ, *<u>be</u>síde* = be(sí:.de)		⇒ #L(σ
(29b)	*<u>à</u>móral* = (ϕ.a:)(mó.ra.lϕ), *<u>cò</u>hàbitátion* = (ϕ.cò:)(hà.bi)(tá:.ti.o)nϕ		⇒ #(ϕ.H)
	<u>ùn</u>nérve = (ϕ.ùn)(nér.ve), *dìslíke* = (ϕ.dìs)(lí.ke)	H_n=H	⇒ #(ϕ.H_n)
(29c.i)	*<u>co</u>hàbitátion* = co:(hà.bi)(tá:.ti.o)nϕ, *decrýpt* = de:(crýp.tϕ)		⇒ #H(σ
(29c.ii)	*<u>un</u>héalhy* = un(héal.thy), *dislíke* = dis(lí.ke)	H_n=L	⇒ #L(σ

Unstressed initial light syllables (29a) are accepted both by B94 and F84. Syllables ending in a sonorant or *s* count as light in unstressed position in B94 (p. 94), therefore the examples in (29c.ii) will be equivalent to (29a). Initial stressed syllables immediately before another stress are also considered to be regular by B94 and F84. An unstressed heavy syllable at the beginning of words, however, is not regarded as regular. B94 (p. 155) claims that the parsing #(ϕ.H) is preferred over #H(, which means that initial heavy syllables tend to be stressed. F84's (pp. 197–198) analyses suggest that if a heavy initial syllable is not stressed (by the Strong Initial Syllable Rule) for some reason, it will undergo reduction. These suggest that if an initial heavy syllable is unstressed, it should be a CVC syllable with a reduced vowel. Dictionaries (Wells, Roach—Hartman (1997) and Kenyon—Knott (1953)), however, differentiate between pronunciations like /kəʊˌhæbɪˈteɪʃᵊn/ and /ˌkəʊ̥hæbɪˈteɪʃᵊn/[18] (*cohabitation*), cf. (29b) and (29c.i) above. Therefore, in cases like (29c.i) the initial heavy syllable should be left unparsed despite the long vowel, i.e. the parsing #H(σ ..., should be admitted. This is a modification of B94's theory: the status of #H(syllables is not clear in B94 (though this configuration seems to be prohibited), and there are no single unstressed initial syllables headed by a long vowel in the examples of B94. The facts recorded in dictionaries contradict this.

pronunciation, e.g. *asymmetrical* /ˌeɪsɪˈmetrikəl/ ~ /ˌæsɪˈmetrikəl/. *be-* is similar to *a-*$_1$, it is an unparsed light syllable (*befriend*).

[18] Naturally, the dictionaries differ in their use of certain notational symbols. This example is taken from Wells (1990).

Up to this point we have seen that the stress pattern of dependent prefixes is determined by the following stem (whether it is stressed on the first or the second syllable) and by Metrical Well-formedness Constraints and the prefix itself (initial light syllable is unstressed, initial heavy syllable is usually stressed immediately before the stem stress). This means that the stress pattern the prefix follows is not an idiosyncratic feature of the prefix, therefore no pre-determined foot structure can be assigned to it.

However, there is another characteristic feature of stress-neutral prefixes that is relevant here. If the prefix is followed by a stem whose first consonant is the same as the last consonant of the prefix, no degemination occurs, as in *<u>un</u>natural* = un-natural /ʌnˈnætʃrəl/. In traditional terms, this is the natural consequence of *un-* being a Level 2 prefix.

This phenomenon may be reflected if some pre-determined structure is assigned to these prefixes: they should contain a syllable boundary (i.e. un.)[19]. This boundary only shows that the prefix-final consonant belongs to the prefix. It must be noted that this pre-determined structure does not influence the parsing of the prefix when it is followed by a consonant, as in B94 all clusters are split except for obstruent+liquid sequences. If, however, a vowel follows, the *-n* should belong to the first syllable, as in *ùnaccéptable* = (ùn.ac)(cèp.ta)ble, *unàided* = un(ài.de)dø. The syllable divisions of Wells confirm this, the final consonant *un-* is never tautosyllabic with the following vowel, e.g. *ùnabrídged* /ˌʌn əˈbrɪdʒd/, even if the following syllable bears stress e.g. *unáided* /ʌnˈeɪdɪd, ˌʌnˈeɪdɪd/, *unease* /ʌnˈiːz, ˌʌnˈiːz/ = VC.V vs. *arábinose* /əˈræbɪnəʊz/, *enámel* /ɪˈnæmᵊl/ = V.CV (cf. *in-* in (31) below).

The classification of the prefix *in-* is problematic. This prefix is traditionally considered to be a Level 1 affix (corresponding to a stress-repellent prefix here), because

(i) the final consonant assimilates to the first consonant of the root,

cf. *innervate, irrelevant, illogical* etc.;

(ii) the stem vowel shortens in certain cases, e.g. *ínfinite, ínfamous*;

(iii) the addition of the prefix may influence the stress pattern of the word,

e.g. *fámous* ~ *ínfamous* vs. *corréct* – *incorréct* and *cértain* – *uncértain*).

F84 (p. 180), however, says that the negative prefix *in-* is stress-neutral (i.e. belongs to the same group as *un-*, traditionally Level 2), and assimilates to the following <u>p, b, l, r, m</u> (i.e. has the alternants: *im-, in-, il-, ir-*), "which reflect assimilations typical of the Latin form". The words in which the stem vowel shortens are regarded as exceptions. This classification can be questioned, since it predicts that *un-* and *in-* behave in a similar manner. Furthermore, the result of the assimilation—if the prefixal consonant becomes identical with the stem consonant—will be a single consonant, i.e. degemination occurs, which is characteristic of stress-repellent prefixes (cf. 5.1.2). Table (30) compares the two prefixes.

[19] It must be noted that syllabification in English is not straightforward and scholars may follow different principles, as pointed out in Wells (pp. xix–xxi).

(30) ***un-* and *in-* compared** (based on F84: 180, 188 and data from Wells)

stem	prefix	*in-*	F84's remark	*un-*
#σ́ ...	stressed	*invísible*	—	*ùnéarth*
		ìmpúre	assimilation	—
	unstressed	*innóminate*	—	*unnécessary*
		insénsitive	—	*unspáring*
		illógical	assimilation	—
		irrélevant	assimilation	—
	primary stressed	*ínfamous*	exception	—
		íngràte	exception	—
		ímpotent	exception, assimilation	—
#σ σ́ ...	stressed	*ìncorréct*	—	*ùnconcérn*
		ìmmatúre	assimilation	—
		ìrretríevable	assimilation	—

F84 (p. 180) says that *ìnfírm* and *ìncorréct* would be main stressed on the prefix if the prefix were stress-repellent. This reasoning is not correct because stress-repellent prefixes are primary stressed only if the stress is placed by a suffix, which is missing in these words. If we hypothesised that *in-* is stress-repellent, words like *ímpotent* could be accounted for (*-ent* is pre-stressed 1/2). The loss of the final consonant in words like *innóminate* would also be regular. However, the existence of such words as *indèlible*, which should be **índelible* if stress was assigned by the suffix, shows that in some cases this prefix is dependent.

Wells gives two syllable divisions if *in-* is followed by a vowel (31). In (31a) the prefix is attached to a free stem and the syllable boundary is between the two morphemes. In (31b) the prefix is stressed and as a stressed syllable 'attracts' the following consonant into its coda (cf. Wells: xix–xxi). An initially stressed bound stem follows the prefix in (31c), and the prefix-final consonant is incorporated into the first syllable of the stem. The pattern (31c) never appears with *un-*.

(31) ***in-* + V sequences** (Wells: 360–376)

in.V		i.nV
(31a)	(31b)	(31c)
inálienable /ɪnˈeɪliənəb^{ə}l/	*ìnapplícalbe* /ˌɪn əˈplɪkəb^{ə}l/	*inépt* ɪˈnept/
inéquity /ɪnˈekwəti/	*ìnelástic* /ˌɪn ɪˈlæstɪk/	*inóculate* /ɪˈnɒkjuleɪt/

In sum it seems *in-* displays a mixed behaviour, sometimes it is stress-neutral (patterning with *un-*) and sometimes it is stress-repellent.

5.1.1.2 Autostressed prefixes

Some stress-neutral prefixes carry obligatory secondary stress, cf. (32), so the prefix is stressed even if secondary stress is not required by other principles (for a complete list see table (24) above).

(32) *màladjústed, mìsspéll*

If we assign underlying structure to these prefixes, the behaviour described above can be accounted for. Obligatorily stressed syllables are foot heads. In B94's system at the beginning of a word a syllable may be a foot head in two ways: it is either the head of a regular left-headed binary or ternary foot, i. e. it is the first syllable of a foot (33a), or it is the head of a degenerate initial foot (ϕ H), where the first syllable of the foot consists of a null segment, and thus the foot is right-headed (33b–c).

(33) **Obligatory secondary stress on the prefix**

(33a) *mis-* = (mis. = (H	*mìsconcéption*	(mìs.con)(cép.ti.o)nϕ (H H)
(33b) *mis-* = (ϕ.mìs) = (ϕ H)	*mìsconcéption*	(ϕ.mìs)|con(cép.ti.o)nϕ (ϕ H) Hn
(33c) *mis-* = (ϕ.mìs) = (ϕ H)	*mìsàpprehénsion*	(ϕ.mìs)(àp.pre)(hén.si.o)nϕ (ϕ H)

As (33a–b) show, if the first stem stress is not immediately after the prefix, there are two possible parsings. In (33a) the prefix is incorporated into a binary foot together with the first stem syllable. In (33b), however, the prefix forms a foot and a stress domain on its own (marked by a vertical line) and the first stem syllable is left unparsed. In words where the first stem syllable is stressed (33c), only the second solution is possible.

This means that autostressed prefixes may be treated in two ways, both of which ensure that the prefix gets stress. The first possibility is that autostressed prefixes have two pre-determined parsings and the choice between them depends on the place of the stem stress. This solution (i.e. that one morpheme has two pre-determined parsings) is not elegant, but has the merit that no syllables remain unparsed word-internally, i.e. we accept (33a) and (33c). The second possibility is that these prefixes always form a foot on their own. This solution ensures that one prefix will have only one pre-determined parsing, but in cases like (33b) a syllable would remain unparsed word-internally, which is generally not allowed by B94. However, if we regard autostressed prefixes to form a separate stress-domain on the basis that these do not influence the stress pattern of the stem (being stress-neutral) and they are always stressed, we may account for the unparsed syllable by saying that domain-initially unparsed syllables are allowed. B94 claims that no heavy syllables may remain unparsed initially, but this assumption has been challenged in the previous section. We claim that #H(is dispreferred but well-formed. Another merit of this second analysis (i.e. that an autostressed prefix forms a separate foot and a separate domain) is that these prefixes will be similar to Type 1 Classical compound-initials cf. 5.2. For these reasons I accept the second solution: autostressed prefixes form a separate foot.

It must be noted that though theoretically the second solution is to be preferred, some words, such as *mìsinformátion,* in which there are two unstressed syllables between the two stresses, show that this choice is not without problems. A ternary foot before the main stress is regular, as in (mìs.in.for)(má.ti.o)nø, which parsing is similar to (33a) above. However, if we adopt (33b), two unstressed and thus unparsed syllables appear before the primary stress, which is not allowed, i.e. (ø.mìs)|in.for(má.ti.o)nø. The question needs further investigation, which would include the analysis of all words with autostressed prefixes.

5.1.2 Stress-repellent prefixes

Despite their name, stress repellent prefixes can be stressed, but they only take main stress if it arises due to the suffix according to F84 (p. 166). In F84's system primary stress is assigned in two ways: (i) by stress rules, depending on the number of syllables in the word and on the strength[20] (actually weight) of the final syllable (cf. F84: 29); (ii) by certain suffixes.

The table in (34) shows the work of these rules in the case of stress-repellent prefixes. If stress rules predict that the main stress should be on the prefix, the prefix 'rejects' the stress (marked by ⌦ in the chart) and the final syllable of the stem will be primary stressed (34a–b). However, when a suffix places stress on the prefix, main stress is 'accepted' by the prefix (34c). Secondary stress can fall on these prefixes, both for rhythmic reasons (34b) and due to the suffix (34e). If the suffix places primary stress right after the prefix, the prefix itself will remain unstressed (34d).

[20] F84 (29) determines the strength of a syllable on an orthographical basis. If the word ends in the following letter sequences, their final syllable is regarded to be strong: -CC, *asterisk*; -VV, *jubilee*; -VVC, *parakeet*; -VCe, *antelope*.

(34) Stress-repellent prefixes (based on Fudge, 1984: 29, 46–49, 60, 165–166)

	Pattern Fudge's stress rules	(34a) no suffix, there is 1 syllable before the main stress	(34b) no suffix, there is more than 1 syllable before the main stress	(34c) stress-fixing suffix, the main stress is on the prefix
	Example words	*combíne*	*còmprehénd*	*cómplicàte*
↓	Penult stressed in bisyllablic words	cómbine ⌦	—	—
↓	Antepenult stressed, if final of the stem is strong (i.e. heavy)	—	cómprehend ⌦	—
↓	Stress by suffix	—	—	cómplicàte
↓	Stress-repellence of prefix	⌦ combíne	⌦ comprehénd	—
↓	Rhythmic secondary stress	—	còmprehénd	—

	Pattern Fudge's stress rules	(34d) stress-fixing suffix, the main stress is after the prefix, there is 1 syllable before the main stress	(34e) stress-fixing suffix, the main stress is after the prefix, there is more than 1 syllable before the main stress
	Example words	*compénetràte*	*còmplicátion*
↓	Penult stressed in bisyllablic words	—	—
↓	Antepenult stressed, if final of the stem is strong (i.e. heavy)	—	—
↓	Stress by suffix	compénetràte	còmplicátion
↓	Stress-repellence of prefix	—	—
↓	Rhythmic secondary stress	—	—

Let us examine how words with stress-repellent prefixes get their stress in B94's system. The central problem is that these prefixes avoid main stress in unsuffixed words (34a–b), i.e. the prefixal syllable cannot be the head of the rightmost non-weak foot. B94 primarily looks at the weight and the position of syllables and nothing prevents a syllable from becoming a foot-head if it is in the correct position.

We consider cases shown by (34a) and (34b) first. The data collected by F84 (pp. 169–188) suggest that stress-repellence is most common in verbs (and adjectives). These are the syntactic classes that tend to parse the final null segment according to B94 (p. 166). Therefore, stress will fall close to the end of the word (i.e. on the stem), and the prefix may only get zero or secondary stress (35a). In the case of nouns, the final null element is extrametrical, which predicts earlier stressing (35b).

(35) **The effect of parsing the final null element**

(35a) *objéct*$_{V}$ = ob(jéc.tϕ) = σ (HW)

(35b) *óbject*$_{N}$ = (ób.jec)tϕ = (Hσ)W

Now let us see whether B94's system makes correct predictions. Final stress of bisyllabic verbs and unsuffixed adjectives is accounted for if the word ends in a superheavy syllable (35a). The last consonant of the word will form a syllable with the word-final null element (-*tø* in this case), while the residue of the surface final syllable will still be heavy (-*jec*-), so the word will have the structure #σHW#. Primary stress will always fall on the heavy syllable, since verbs parse the final null element and the foot *(σHσ) is ill-formed. However, a number of verbs are finally stressed though their ultimate syllable is simply heavy: *applý, obéy*, etc. B94 (p. 51, Fn. 7) treats these words exceptionally, because he supposes that there is a null segment at the end of the word even though the word ends in a vowel.[21] Therefore, these verbs will have the same structure as *objéct*, i.e. *applý* = ap(plý.ϕ). This covers the majority of cases in (34a).

There are some prefixes that are stress-repellent in nouns as well, which are listed in (36). These nouns preserve the stress of their verbal counterpart and so parse the null element like verbs (B94: 166). Stress-preservation between words that are used as nouns as well as verbs occurs in the other direction too: the verbs *jóurney, vólley, súrvey* preserve the stress of their noun counterpart (B94: 51, Fn. 7).

[21] These verbs are regular according to B94 (p. 245): "we are essentially taking the final null vowel of verbs as a sort of null (inflectional) suffix", i.e. it can be metrified, predicting ap(plý.ϕ). However, B94 (p. 52) says that "our prediction is then that verbs ending in an overt vowel should metrify like nouns — a prediction that is generally correct", predicting per(só.ni.fy)ϕ. I think this contradiction shows that this class of verbs is marked. There are other cases where a null element must appear after a final vowel. When the word is composed of only one syllable, e.g. *loo* (lóo.ϕ), *go* (go.ϕ) or in the case of oxytonic nouns ending in a vowel (which are similar to *obéy*), e.g. *kàngaróo* (kàn.ga)(róo.ø) (see also Section 6.2).

(36) **Prefixes stress-repellent in nouns** (F84: 169–188)[22]

Prefix	Examples	Prefix	Examples
ac-	*accóunt, accórd, accláim*	*col-*	*collápse*
af-	*affáir, affrónt*	*com-*	*commánd*
al-	*allúre*	*de-*	*debáte, deféat*
ap-	*appéal, appróach*	*dis-*	*dìsdáin, dìspúte, dìssént*
ar-	*arráy, arrést*	*e-*	*eléct*
as-	*assáult*	*ef-*	*efféct*
at-	*attáck*	*re-*	*rebúke, repást, repórt*

Words like *còmprehénd* (34b) are problematic for B94, because his system would predict primary stress on the first or on the second syllable (37). Therefore, these words should be treated as exceptional in the sense that their main stress falls on the final weak foot (cf. autostressed endings, Fn. 15 above, Section 10.1 below, and B94: 47 Fn. 5, 69, 74).

(37) *còmprehénd*[23]

com.pre.hen.dϕ = H_nLH_nW = (HL)(HW) = *(cóm.pre)(hèn.dϕ)

= (ϕH)(LLW) = *(ϕ.còm)(pré.hen.dϕ)

= H(LLW) = *com(pré.hen.dϕ)

exceptionally: = (HL)(H́W) = (còm.pre)(hén.dϕ)

As for cases in (34c–e), B94 (pp. 218–223) claims that stressing by suffix simply means the preservation of stem stresses. This assumption is correct when there is a sequence of suffixes (as in (34e) *còmplicátion*). However, in cases like *cómplicàte*, there is no stem stress that could be preserved. The key issue here is that the main stress is 'placed' by a suffix. Suffixes have pre-determined foot structure (cf. (23) above), which would account for the place of the stress (38).

(38) *cómplicàte* complic + (a.te) → (cóm.pli)(cà.te)

In sum, in B94's system—where no syllable can reject stress—the stressing of stress-repellent prefixes depends on the segmental and morphological material that follows them. Therefore, these prefixes will have no pre-determined foot-structure (similarly to dependent

[22] The prefixes *ac-, af-, al-, ap-, ar-, as-, at-* are the forms of the prefix *ad-*. For some reason, the forms *ad-, an-* are claimed to be non-stress-repellent in nouns, e.g. *ádverb, ánnex*. There are exceptions in both groups (e.g. *áffix, advíce*). The prefixes *col-* and *com-* are the forms of *con-*, while *e-* and *ef-* are the forms of *ex-* and these behave similarly to *ad-* and its assimilated forms. F84 has no account of why certain assimilated forms behave differently from others.

[23] In these analyses the dual behaviour of H_n syllables (i.e. that they count as H foot-initially and count as L non-initially) is exploited.

prefixes in 5.1.1.1). Cases like *applý* (34b) and *còmprehénd* (34b) can only be treated as exceptions.

The prefixes of this group—beside stress-repellence—are different from dependent prefixes in that if two identical consonants meet at the border between the prefix and the stem, degemination is triggered and one consonant is lost (39).This suggests that no underlying syllable structure should be assigned to these prefixes.

(39) *connéct* /kəˈnεkt/

5.1.3 Primary stressed prefixes

A minor group of prefixes appears in nouns that have a verbal counterpart and the two are stressed differently, e.g. *ábstract*$_N$ ~ *abstráct*$_V$. The prefix is generally stress-repellent in the verbs, but in the noun it gets primary stress. Therefore, the prefix in nouns is not stress-neutral because stress-neutral prefixes our outside the Stressable Portion of the word and consequently cannot receive main stress. It cannot be stress-repellent either, because stress-repellent prefixes can get the main stress only if it is assigned by a suffix, which is missing in these words. Furthermore, as the verbal prefix is stress-repellent, the verb and the noun would have identical patterns, which is not unprecedented, as *assáult*$_{N, V}$ shows. It seems this is a third category, which I name "primary stressed prefixes".

This group is closest to autostressed prefixes (a subgroup of stress-neutral ones), the difference being that autostressed prefixes always carry secondary stress rather than primary. The first syllable of the prefix should be a foot-head. Whether we choose the parsing (σ or (ø.σ) is a question that will be dealt with in Section 8.3, which discusses disyllabic words, because the overwhelming majority of words with primary stressed prefixes are composed of two syllables (cf. F84: 189–192).

5.2 Classical compounds

This section investigates how the behaviour of classical compound-initials can be reflected in B94's system. The first subsection compares Type 1 and Type 2 compounds, concentrating on their stress patterns, and the behaviour of sounds at the border between the two parts of the compound (e.g. vowel lengthening, non-reduction of the initial syllable of the compound-final). The second subsection examines how the different behaviour of Type 1 and Type 2 compounds can be reflected by the pre-determined structure of compound-initials and by exploiting B94's Word-condition.

5.2.1 Type 1 and Type 2 compounds compared

The categorisation of classical compounds containing bound elements is not easy. F84 claims that basically there are two types, which he calls Type 1 and Type 2. These sets, however, are not clear-cut: a certain compound-initial can often form compounds of both types. Furthermore, compound-initials sometimes also 'serve' as prefixes. The chart in (40) summarises F84's findings.

(40) **Classical compound-initials** (based on F84: 150–163)

Types	**E.g.**	**Example words**			**No. of items**	
		compound		prefix		
Type 1	*arch-*	*árchdùke, àrchbíshop*		—	7	
	trans-	*tràns-còntinéntal*		*trànscríbe*	8	**15**
Type 2	*allo-*	*állotròpe, allópathy*		—	30	**30**
Type 1~2	*anti-*	*ánti-frèeze, ànti-clérical*	*ánticlìne, antìcipátion*	—	26	
	di-	*dípòle*	*dígràph, dìglóssia*	*dìgréss*	3	**29**
Anomalous	*infra-*	*ìnfradíg, ínfra-strùcture*			1	**1**
Total						**75**

In the discussion below we will look at the behaviour of these categories and some modifications will be proposed. First, let us see on what grounds Type 1 and Type 2 compounds can be distinguished according to F84, who looks at the factors in (41).

(41) **Factors that differentiate Type 1 and Type 2 compounds** (based on F84: 138–141)

(i) whether the compound final is free (Type 1) or bound (Type 2);

(ii) whether the two parts are of Greek origin
(Type 1: not necessarily; Type 2: both Greek);

(iii) whether the first syllable of the compound-final is reduced
(Type 1: no, Type 2: yes/no);

(iv)whether the final vowel of the first morpheme may be long
(Type 1: yes, Type 2: no);

(v) stress placement (see in (42) and (44) in detail).

Type 1 compounds are composed of a first element chosen from a rather limited list of items mainly of Greek or Latin origin (F84: 150–163) and a second element which is usually a free form. From the point of view of stressing, three subgroups can be distinguished (42).

(42) **Stress-placement for Type 1 compounds** (F84: 141)

(42a) if the second element is monosyllabic, primary stress will fall on the compound-initial, e.g. *súpermàn;*

(42b) if the second element is bisyllabic and its second syllable ends in -el, -er, -le, -re, -sm, which means it contains a syllabic consonant (or a schwa, which freely alternates with a syllabic consonant), the word behaves as if the second element were monosyllabic cf. (42a), i.e. primary stress will be on the compound-initial, e.g. *órthocèntre;*

(42c) in other cases main stress will fall on the second element, e.g. *mònocòtylédon.*

Secondary stress is assigned to the two elements as if they were two separate words (43a) vs. (43b). Recall that in F84 secondary stress is assigned due to Long Retraction (cf. Sections 2.2 and 2.4 above), i.e. two CV syllables (-*coty*-) are normally skipped, predicting the pattern in (43a). The prefix-final vowel is lengthened, as if it were word-final (43b). The first syllable of the second element is not reduced, as if it were word-initial (43c) (cf. (F84: 197) Strong Initial Syllable Rule).

(43) *mònocòtylédon*

(43a) **monòcotylédon* = *mo(nò:.co.ty)(lé:.do)nϕ

(43b) *mònocòtylédon* /ˌmɒnəʊˌkɒtəˈliːdən/ = (mò.no:)(cò.ty)(lé:.do)nϕ

(43c) *post-Edwardian* /ˌpəʊstedˈwɔːdɪən/ */ˌpəʊstədˈwɔːdɪən/

F84 (p. 140) says that in Type 2 compounds both the compound-initial and the compound-final are likely to be of Greek origin and both elements tend to be bound. As far as stress is concerned, three patterns are attested (44). The first two patterns are exactly the same as in the case of Type 1 compounds: the compound-initial gets primary stress if the compound-final is either monosyllabic (44a), or disyllabic, with a weak syllable at the end (i.e. the final syllable is headed by a syllabic consonant) (44b). The third pattern, however, is different in the two types of compound (44c): Type 2 compounds are stressed as if they were one word that constitutes one stress domain, while Type 1 compounds are stressed as two domains. As a result, in the case of Type 2 compounds the final vowel of the compound-initial is not lengthened, and the first syllable of the compound-final is often reduced if it is not stressed (e.g. *autócracy* /ɔːˈtɒkrəsi/).

(44) **Stress-placement for Type 2 compounds** (F84: 141)

(44a) if the second element is monosyllabic, primary stress will fall on the compound-initial, e.g. *pséudonỳm, mónològue;*

(44b) if the second element is bisyllabic and its second syllable ends in -el, -er, -le, -re, -sm, which means it contains a syllabic consonant (or a schwa, which freely alternates with a syllabic consonant), the word behaves as if the second element were monosyllabic cf. (44a), i.e. primary stress will be on the compound-initial, e.g. *cátaplàsm, mónocỳcle;*

(44c) in other cases stress is computed by ordinary stress rules, as if the compound was one stress-domain, e.g. *hỳdrochlóric, àutócracy, sùperèrogátion.*

For comparison, table (45) shows Type 1 and Type 2 compounds next to each other. As F84 suggests (and as I shall propose in 5.2.2.1 below), Type 1 compounds constitute two separate stress-domains. This is indicated by a vertical line between the two domains.

(45) **Type 1 and Type 2 compared** (based on F84: 141)

Structure	**Type 1 compounds**	**Type 2 compounds**
(45a) monosyllabic final	*súpermàn* = (sú.per)|(màn.nϕ) = (Hσ)|(σW)	*pséudonỳm* = (pséu.do)(nỳm.mϕ) = (Hσ)(σW)
(45b) bisyllabic final ends in syllabic C	*ántinòvel* = (án.ti)|(nò.vel) = (Hσ)|(σW)	*cátaplàsm* = (cá.ta)(plàs.mϕ) = (Lσ)(σW)
(45c) otherwise	*àuto-suggéstion* = (àu.to:)|sug(gés.ti.o)nϕ = (Hσ)|σ(σLσ)W	*àutomátion* = (àu.to)(má:.ti.o)nϕ = (Hσ)(σLσ)W

In sum, the two types of compound differ in the following (46):

(46) **Type 1 and Type 2 compounds differ in**

(i) stress-pattern—if the compound-final consists of at least two syllables and if the second syllable in disyllabic compound-finals contains a full vowel rather than a syllabic consonant;

(ii) length of the final vowel in the compound-initial;

(iii) reduction of the first syllable in the compound-final.

A problematic case must be mentioned. Several of these morphemes end in an orthographic o, which in pronunciation may appear as a long vowel /əʊ/, as in *holoblastic* /ˌhɒləʊˈblæstɪk/, a short lax vowel /ɒ/, as in *holopathy* /hɒˈlɒpəθi/ or a reduced vowel /ə/, as in *holoblastic* /ˌhɒləˈblæstɪk/. This issue is important because this is a diagnostic feature for differentiating Type 1 and Type 2 compounds. F84 says that lengthening is only characteristic of Type 1 compounds. The problem is with F84's classification. He says that first elements such as *hetero-, holo-, homo-* belong only to Type 2 compounds, i.e. the final vowel should not lengthen. This is not the case according to Wells, who says that *hetero-,* for example, can behave in two ways (47).

(47) **The dual behaviour of classical compound-initials ending in-*o*** (Wells: 335)

hetero-

(47a) /ˈˌhetərə(ʊ)/ with a stress neutral suffix

hèterográphic

(47b) /ˌhetəˈrɒ/ with a stress-imposing suffix

hèterógraphy

It is not clear, however, what Wells means by "stress-neutral suffix" in (47a), since *-ic* is a stress-imposing suffix, which places the main stress on the syllable immediately preceding it. Probably, Wells treats the compound-final as a "stress-neutral suffix", because *-ic* places the main stress on *-graph-,* and as a result, the compound-final *-graphic* constitutes a foot on its own and does not influence the stress pattern of the compound-initial. Similarly, Wells treats *-graphy* as a "stress-imposing suffix".

It is not only *hetero-* that displays this dual behaviour. The stress patterns of initial bound morphemes ending in *-o* are shown by table (48), which contains all such morphemes found in Wells. The columns correspond to F84's groups, the rows show Wells' classification. F84 did not examine those morphemes that appear in scientific vocabulary exclusively, hence the huge number of items in the last column.

(48) **Stress patterns of initial bound morphemes ending in *-o*** (F84 and Wells compared)

Fudge / **Wells**	**Type 1 + prefix**	**Type 2**	**Type 1 & 2**	**Absent in Fudge, present in Wells**
2 patterns: #(σ́ … σ:) ~ #σ ..(σ	—	*apo-, endo-, hetero-, holo-, homo-, iso-, philo-, physio-, proto-, psycho-*	*auto-, hydro-, hypo-, macro-, micro-, mono-, neo-, ortho-*	*allo-, homeo-, hyalo-, morpho-, muco-, myco-, myelo-, myo-, mytho-, nephro-, neuro-, nitro-, noso-, nucleo-, oligo-, onco-, ophthalamo-, organo-, ornitho-, oscillo-, osteo-, oto-, palato-, paleo-, patho-, pedo-, pharmaco-, pharyngo-, phono-, photo-, phyco-, phylo-, phyto-, piezo-, plasmo-, pneumo-, pyelo-, pyo-, pyro-, radio-, rhino-, rhizo-, sapro-, sarco-, schizo-, sclero-, socio-, somato-, spectro-, spermato-, sphygmo-, spleno-, staphylo-, stato-, steato-, steno-, stereo-, stylo-, tauto-, thermo-, theo-, thigmo-, thrombo-, thyro-, tracheo-, tribo-, tropho-, tropo-, uro-, xantho-, xeno-, zygo-, zymo-*
only with stress-neutral suffix	—	—	*pseudo-*	*meso-, phyllo-, platino-,phospho-, octo-, thio-, sporo-*
***o#* always short**	*contro-*	—	*kilo-*	*rheo-, topo-, stomato-, nomo-*
***o#* always long**	*pro-, retro-*	*ecto-*	—	—

Classical compound-initials similar to *hetero-* have three possible pronunciations that are parallel to (47a) /-əʊ/ ~ /-ə/ (final V unstressed) and (47b) /-ˈɒ/ (final vowel stressed). These pronunciations suggest that such compound-initials can be parsed in two ways: (49a) and (49b).

(49) *hetero-*

(49a) /ˈˌhetərə(ʊ)/ = (he.te.ro) *hèterográphic*

(49b) /ˌhetəˈrɒ/ = (he.te)(ro *hèterógraphy*

These parsings ensure that if the sequence is composed of three syllables, the middle one will never be stressed, since it cannot become a foot-head. An example for a bisyllabic sequence is in (50). On the choice between different parsings of the same sequence (i.e. (49a and b)) see the following subsection (5.2.2).

(50) *homo-*

(50a) /ˈˌhəʊmə(ʊ)/ = (ho.mo) / (ho.mo *hòmotáxis*

(50b) /həˈmɒ/ = ho(mo *homógonous*

This dual behaviour is partly accounted for if we modify F84's classification and claim that all the classical compound-initials that end in *-o* can form Type 1 compounds as well. The fact that these are used with free stems (which is not characteristic of Type 2 compounds) supports this assumption (e.g. *hèterocýclic, hòmoséxual*). However, it is not only those Type 2 classical compound-initials that end in *-o* that can be attached to free stems, though these constitute the majority, e.g. *milligram, hemisphere.*

I suggest that the difference between Type 1 and Type 2 compounds should only depend on the compound-final. The compound-final is bound in Type 2 compounds, while it is a free stem in Type 1 compounds. This means that I depart from F84 and say that words containing certain compound-initials such as *mega-, hetero-* etc. can not only form Type 2 compounds, but Type 1 compounds as well, if the second element is free. As regards stressing, F84's Type 2 examples generally contain a "short" second element (i.e. monosyllabic or disyllabic with a syllabic sonorant as the second syllable), in which case the stressing of Type 1 and 2 compounds is exactly the same, e.g. *kilometre*.

5.2.2 Analysis

In the following two sections I will try to propose a representation that accounts for the dual behaviour of classical compounds. F84 (p. 141) says that the stressing of classical compounds depends on the compound-initial (Type 1 or Type 2) and on the compound-final (monosyllabic; disyllabic, with the second syllable being headed by a syllabic sonorant; otherwise), which gives 6 subgroups. These six subgroups are arranged into two sets by F84, according to the compound-initial, i.e. Type 1 and Type 2. However, it seems that it is not the type of the compound-initial that really governs the choice of pattern in most cases. If the compound-final is short enough (1 σ or (σW)), the two types have identical stress patterns. Stressing differs only if the compound-final is longer. Thus, from the point of view of stressing, compounds involving bound elements fall into three sets (51a, b, c) which do not correspond to the two sets of Type 1 and Type 2 compounds (CCI = Classical Compound Initial, CCF = Classical Compound Final, σW = disyllabic CCF where the second syllable is headed by a syllabic sonorant).

(51) **The stressing of classical compounds** (partly based on F84: 141)

CCF / **CCI**	**σ or σW**	**otherwise**
Type 1	(51a) **Main**: 1st σ of CCI **Secondary**: CCF *súpermàn, pséudonỳm* *órthocèntre, cátaplàsm*	(51b) **Main**: regular on CCF *psèudo-scièntífic* **Secondary**: regular + 1st σ of CCI
Type 2		(51c) **Main**: regular on whole word *àutócracy* **Secondary**: regular on whole word

Though as table (51) shows, the Type 1—Type 2 distinction is not needed in all environments, I will still keep these two groups, because Type 1 compound-initials are followed by free stems, and Type 2 compound-initials are followed by bound stems. In the two subsections that follow, I will discuss these types and show that even if we keep this distinction, the threefold behaviour described in (51a,b,c) can be accounted for.

5.2.2.1 Type 1 compounds

In Type 1 compounds the compound-initial is always stressed on its own, i.e. it will have the same stress pattern in all words. This is not surprising, because the second element is a free stem, i.e. it tends to preserve its original pattern. Let us look at the problem from the point of view of the compound-initial. The compound-initial forms a complete foot and is concatenated with the following stem without overlapping with the first syllable of the stem so that whatever comes after, it cannot modify the structure of the compound-initial. For the sake of visibility, a vertical line (|) will indicate the borderline between the two parts of the compound in the analyses below.

A monosyllabic compound-initial can be represented in two ways. Monosyllabic feet are ill-formed in B94, the minimal foot is bisyllabic. The head of the other syllable of the foot will be the null segment. The question is whether the syllable headed by this null element precedes or follows the full syllable, since both word-initial (ϕH) (52a, c) and word-final (Hϕ) feet (52b, c) are well-formed (B94: 155).

(52) **#(øH) and (Hø)#**

(52a) *<u>mis</u>àpprehénsion* = (ϕ.mìs)|(àp.pre)(hén.si.o)nϕ = #(ϕH)|(Hσ)(σLσ)W#

(52b) *<u>cómplic</u>àte* = (cóm.pli)|(cà.te) = #(Hσ)|(HW)# = #(Hσ)|(Hϕ)#

(52c) *tóp* = (tóp.pϕ), *gó* = (gó.ϕ) = #(Hø)#

If we assume that monosyllabic compound-initials behave like separate words, the null segment must follow the overt syllable, because monosyllabic words are parsed like this (52c) (B94: 57). However, if we want to emphasise the prefix-like nature of the compound-initial, the null segment must come first, like in the case of true prefixes (52a). These possibilities are illustrated in (53). Both solutions result in a well-formed foot, with stress on the correct syllable. Both solutions have drawbacks: in the case of (53a) a null segment appears in the middle of a (larger) word, which is rare but not unprecedented (cf. B94: 241, 267, 309); in the case of (53b) a right-headed foot emerges, which is again dispreferred (B94: 109); both parsings are equally good and equally bad in this environment ("metrification of empty structure (initial or final) ... [is] a case of 'misalignment'" (ibid. 150)). There is one argument, though, that suggests that (53a) should be preferred over (53b). If the compound-final is short (case (51a)), it will carry secondary stress and so the compound-initial should be main stressed. The only right-headed foot in B94's foot-inventory is (ϕ.H)(53b), which is a kind of weak foot. As such, this foot should not bear primary stress, as primary stress falls on the rightmost non-weak foot (B94: 16). Originally, the degenerate foot (ø.H) is a device to represent adjacent initial stresses, where this degenerate

foot is always secondary stressed. The issue of compound-initials is not discussed in B94, and there are not enough arguments to support the claim that this foot cannot bear primary stress. This problem is discussed in more detail in Section 8.3. In the analyses below and the Appendices I will use the 'classical' form of the degenerate foot, i.e. follow (53b).

(53) **Compound-initial: 1 syllable**

(53a) *di-* = (di:.ϕ) → (dí:.ϕ)|(pò.le)

(53b) *di-* = (ϕ.di:) → (ϕ.dí:)|(pò.le)

If the compound-initial is made up of two syllables, the stress will always fall on the first syllable of it and the two syllables form a regular binary foot (54).

(54) **Compound-initial: 2 syllables**

anti- = (an.ti) = (Hσ)

/ˌæntɪ/ = (HL), /ˌæntaɪ/$_{Am}$ = (HH)

<u>ànti</u>ballístic = (àn.ti)|bal(lís.ti.cϕ), *<u>ànti</u>biótic* = (àn.ti)|bi:(ó.ti.cϕ),

<u>ànti</u>macassar = (àn.ti)|ma(cás.sar.rϕ)

The question arises why the compound-initial forms a complete foot. In several cases a well-formed ternary foot could be formed from the compound-initial and the first, unstressed syllable of the compound-final, e.g. *àntiballístic* = (àn.ti)|bal(lís.ti.cϕ) / ?(àn.ti.bal)(lís.ti.cϕ). However, this incorporation is only possible if the second syllable of the compound-initial is light or H_n. If it is heavy, an ill-formed *(σHσ) foot would emerge. Furthermore, the incorporation of the first syllable of the compound-final into the foot of the compound-initial would erase the border between the two parts and the edge-effects (i.e. long prefix-final vowel, strong stem-initial syllable) could not be accounted for. Therefore, we maintain the assumption that the two parts form separate domains and thus separate feet. To ensure that the two parts are separate and that the compound-final in Type 1 cases is not bound, we have to extend B94's Word-condition to Type 1 compound-initials. The original form of the constraint is given in (55).

(55) **Word-condition** (B94: 274)

... $_{word}$] SUF_w

This constraint, which is an output condition holding only in derived structure, says that certain suffixes (those belonging to SUF_w, e.g. *-ful*) only attach to words. The Word-condition (55) expresses that certain affixes do not attach to bound stems, cause no stem remetrification and do not induce segmental changes in the stem (B94: 282). Consequently, is not applicable in the case of Type 2 compounds, which have bound compound-finals. The Word-condition is different from Aronoff's claim that all word-formation is word-based (1976: 21). In Aronoff's terms e.g. *nominee* is derived from *nominate* by truncation (ibid. 88), while in B94's terms *-ee* attaches to a bound stem. Rather, the effects of the Word-condition are similar to that of the #

boundary of SPE (B94: 284) and thus reflect the difference between Level 1 and Level 2 affixes of Siegel (1974).[24]

Type 1 compound-initials attach to free stems and are stressed independently, i.e. cause no remetrification. No extra segments appear when a Type 1 compound-initial attaches to a stem. Neither is the stem-vowel shortened, as (56).

(56) **Type 1 compounds with a long stem-vowel** (examples are from F84: 150–163)

chá:mber → ántechà:mber
dú:ke → árchdù:ke
chá:nger → áutòchà:nger
locú:tion → cìrcumlocú:tion

B94 (p. 321) claims that in the environment of those suffixes that impose the Word-condition (55) on their stems no shortening occurs, i.e. the Word-condition (55) is able to override Generalised Shortening (57).

(57) **Generalised Shortening (GS)** (B94: 320)

V must be short in: ... ___ ... -affix
(linear order irrelevant)

Examples in (58) show the effects of GS and the Word-condition.

(58) **The work of GS**

(58a) GS applies (... ___ ... -affix)	(58b) GS does not apply before a SUF_w
fí:nite → ínfinite[25]	fí:nite → fí:niteness
cý:cle → bí:cycle	cý:cle → cý:cleless
télepho:ne → teléphony	télepho:ne → télepho:neless
gra:te → gratify	gra:te → gra:teful

Now the Word-condition (55) might be extended to include Type 1 classical compound-initials (CCI1) as well (59). This ensures that the two parts of the compound are kept apart.

(59) **Extended Word-condition**

... $_{word}$] SUF_w
CCI1 [$_{word}$ ...

However, if the two elements are two independent words, nothing could prevent the first element from getting main stress and the whole word would have two primary stressed syllables. B94's constraint for primary stress (60) handles these cases if its domain is the whole compound.

[24] Fabb (1988) points out that the level-ordering of affixes does not give satisfactory results in many cases.

(60) **Primary stress** (B94: 16)

Primary stress is on the rightmost non-weak foot.

The assumption that the domain of (60) is the whole compound is confirmed by words whose second element is monosyllabic or is bisyllabic but the second syllable is headed by a syllabic consonant. In these cases the second element will form a weak foot (σ\W) with the word-final null element or the syllabic consonant. This means that the two categories of F84 (namely monosyllabic CCF and disyllabic CCF with a syllabic sonorant at the end) are collapsed into one if analysed in B94's terms. This is also supported by the fact that these two classes follow the same stress patterns (cf. (51a) above). Since (60) looks at the whole compound, primary stress will fall on the compound-initial (61), because the weak foot will be secondary stressed.

(61) **Stress on the Type 1 classical compound-initial** (examples are partly from F84)

(61a) monosyllabic compound-final	(61b) compound-final ends in a weak syllable
ánti-frèeze = (án.ti)|(frèe.ze) = (Hσ)|(σW)	*ántinòvel* = (án.ti)|(nò.vel) = (Hσ)|(σW)
árchdùke = (ár.chϕ)|(dù.ke) = (Hσ)|(σW)	*órthocènter* = (ór.tho)|(cèn.te)rø = (Hσ)|(σW)W
démigòd = (dé.mi)|(gòd.dϕ) = (Hσ)|(σW)	*órthocèntre* = (ór.tho)|(cèn.tre) = (Hσ)|(σW)
dípòle = (dí:.ϕ)|(pò.le) = (Hσ)|(σW)	*bíocỳcle* = (bí.o)|(cỳ.cle) = (Hσ)|(σW)[26]
hýperspàce = (hý.per)|(spà.ce) = (Hσ)|(σW)	

This solution (i.e. that the two elements of Type 1 compounds are treated separately, but primary stress is assigned to the whole sequence) has the following advantages: (i) the lengthening of the vowel at the end of the classical compound-initial is parallel to cases like *potáto*; (ii) the non-reduction of the first syllable of the compound-final is parallel to the behaviour of word-initial syllables; (iii) the unparsed syllable at the beginning of a domain does not cause ill-formedness as some examples of B94, given in (62), show.

(62) *ànti–ballístic* = (àn.ti)–bal(lís.ti.cϕ)
im(prèg.na)(bí.li.ty)
trans(fì.gu)(rá:.ti.o)nϕ
ex(tèm.po)(rá:.ne.ou)sϕ

In sum, in order to reflect the 'autonomy' of Type 1 compound-initials we have suggested that these items should have pre-determined metrical structure. All these compound

[25] On the classification of the prefix *in-* see Section 5.1.1.1 above.

[26] For reasons that are not clear F84 would treat this word as a Type 2 compound. He says that words like *epicycle, kilometre* belong to Type 2 compounds, probably because both constituents are of Greek origin. However, these compound-finals (*cycle, metre*) can be regarded as free stems today and Type 2 compounds typically have bound finals. So I see no reason to follow F84's assumption, and I will treat words similar to *biocycle* or *kilometre* as Type 1 compounds.

initials form a foot on their own and therefore do not modify the foot-structure of the following compound-final. If the compound-final is longer than a (HW) foot, it will carry primary stress, otherwise it is secondary stressed and main stress falls on the first syllable of the compound-initial. This all follows from the parsing of these words. The analysis that the compound-initial is a foot on its own is parallel to the analysis of the ending *-hood,* for example, which does not modify the stress pattern of the preceding item (63), because it is simply concatenated to it, without syllable-overlap.

(63) *-hood* (based on B94: 277)[27]

-hood = (hood.dϕ)

likelihood: (li.ke.ly) + (hood.dϕ) → (lí.ke.li)(hòod.dϕ)

Furthermore, the Word-condition has been extended to Type 1 compound-initials, which ensures that these morphemes should attach only to free stems, which again is parallel to the behaviour of Germanic affixes.

5.2.2.2 Type 2 compounds

Type 2 compounds are stressed as nonderived words if the compound-final is at least disyllabic and does not constitute a (HW) foot (i.e. case (51c), see example (64c) below). In this case we have no reason to believe that any kind of pre-determined structure is present in the lexicon for these items, only Metrical Well-formedness should be satisfied.

The other group, where the compound-final is shorter, cf. (51a), is problematic. In B94's system the correct stress pattern can only be arrived at if the final null segment is parsed even with nouns (64a–b), which is normally not the case.

(64) **Parsing of Type 2 compounds**

(64a) *<u>pséudo</u>nỳm* = (pséu.do)(nỳm.mϕ) = (HL)(HW)

(64b) *<u>cáta</u>plàsm* = (cá.ta)(plàs.mϕ) = (LL)(HW)

(64c) *<u>hỳdro</u>chlóric* = (hỳ.dro)(chló.ri.cϕ)= (HL)(LLW)

In the case of Type 1 compounds we suggested that the two elements making up the compound should be treated as separate constituents due to the Extended Word-condition. Each compound-initial had pre-determined structure: it formed a foot on its own. Therefore, when the word was short enough the compound-final could only be parsed with the final null vowel or weak syllable, because monosyllabic feet are ill-formed. These solutions are not open for Type 2 compounds if we want to treat the whole Type 2 class in a uniform manner. For longer items the compound is treated as a whole and as a result, the compound-initials might have different stress-patterns, which is not possible if they are treated separately (65), (66).

[27] Actually, B94 gives the parsing (hoo.dø) for *-hood*. His analysis is ill-formed, because it gives a *(LW) foot as the vowel is short despite the double vowel letter. The final consonant should be bipositional here to yield a well-formed (HW) foot.

(65) *anti-*

(65a) *<u>antì</u>cipátion* = an(tì.ci)(pá:.ti.o)nϕ

(65b) *<u>ànti</u>cipátion* = (àn.ti.ci)(pá:.ti.o)nϕ

(66) *hetero-*

(66a) *<u>hétero</u>dòxy* = (hé.te.ro:)(dòx.y)

(66b) *<u>hèteró</u>gynous* = (hè.te)(ró.gy.nou)sϕ

F84 (p. 142) remarks that the compound-finals of Type 2 compounds, which are bound elements, form a relatively small set. These are called Greek suffixes by B94 (p. 215) and he attributes pre-determined structure (HW) to these, saying that "Greek suffixes like *crat, gram, graph,* ... have 'quasi'-word status, that is that words containing them are partially similar to compounds. This will force the suffix to have its own stress, with consequent metrification of the null vowel".

Let us examine these compound-finals in detail. Out of the 45 commonest second elements listed by F84 only two are made up of a 'surface' sequence σH (namely *-anthrope, -therap-*), all the others are monosyllabic or bisyllabic with a weak second syllable (e.g. *-dox, -metre*), i.e. having the structure σW in B94's system, which is in line with B94 assumptions. Let us look at the latter case first. To ensure that these compound-finals should parse their final null element (in a similar manner to verbs) and as a result should have the structure (HW), we either form a constraint like (67) or we assign pre-determined structure to these compound-finals, in a similar manner to suffixes (68) or Type 1 compound-initials, and include the final null segment into a foot. Choosing the latter solution is better, since it solves the problems raised by the fact that in B94's system the orthographical form is parsed, i.e. *meter* and *metre* has a different number of syllables: me.te.rϕ and me.tre respectively.

(67) **Metrification of Type 2 classical compounds**

... ϕ)#

(68) **Pre-determined parsings of Type 2 compound finals**

-dox = dok.sϕ)	*-meter* = me.te)rϕ[28]
-nym = nym.mϕ)	*-culture* = cul.tu)re
-crat = crat.tϕ)	

[28] On *-meter* Wells (1990: 445–446) says that this compound-final has two pronunciations (i) /ˌmiːtə/ and (ii) /mɪtə/ (corresponding to (me.te)rϕ and (σ me.te)rϕ respectively), largely depending on the meaning. (i) is usually used as 'a unit of length' and sometimes as 'a measuring device', while (ii) is used in versification and again a 'a measuring device'. Since the categories are not clear-cut, some competing pronunciations appeared. In our categories 'unit of length' should be Type 1, while 'measuring device' and the versification sense should be a Type 2 compound-final with the structure me.te)rϕ.

The question arises whether we should follow B94 (p. 215) in saying that these compound-finals form a foot on their own, e.g. *-dox* = (dox.ø) = (HW), or it is enough to postulate a right boundary after the null segment, as in (68), i.e. *-dox* = dok.sϕ) = HW)? The latter solution gives satisfying results when the first syllable of the compound-final ends in an obstruent or has a long vowel, i.e. it constitutes an ordinary heavy syllable (31 out of 45 in F84's list), cf. (69). In this case the compound-final will automatically be a weak foot (HW) on its own with post-tonic secondary stress, because of the ill-formedness of *(σHσ).

(69) **Type 2 compound-finals with the structure HW**

(69a) *aristocrat* = a.ris.to.crat.tϕ) = a(rís.to)(crat.tϕ) ~ (á.ris.to)(crat.tϕ) vs. *(à.ris)(tó.crat)tϕ, *a(rís.to.crat)tϕ

(69b) *hypoderm* = hy.po.de:r.mϕ) = (hý.po)(dè:r.mϕ) vs. *hy(pó.de:r.mϕ)

However, 12 out of the 45 compound-finals end in an occasionally short vowel and a sonorant, i.e. a H_n syllable. Therefore, the compound final will have the structure H_nW). This sequence may be parsed in two ways. First, it can constitute a binary weak foot, having a bipositional sonorant (H_nW), e.g. *héteronỳm* = hétero(nỳm.mϕ), similarly to cases in (69). Second, it may belong to a ternary foot (σH_nW), a subtype of (σLσ), where the medial syllable behaves as light and the primary stress is on this (non-weak) foot, e.g. *hèterónymous* = hete(ró.nym.mou)s, *monógamy* = mo(nó.gam.my). A similar result is obtained if the final consonant is not bipositional, e.g. *hèterónymous* = hete(ró.ny.mou)s, *monógamy* = mo(nó.ga.my), where the ternary foot is (σLW). In the latter two examples the suffix after the compound-final replaces the null segment at the end of the stem. If we maintain B94's assumption that the ending constitutes a foot on its own, words like *monógamy* would violate suffix-consistency. In that case the expected pattern would be **mónogàmy* = *(mó.no)(gà.my). Therefore, I claim that Type 2 compound-finals have pre-determined structure, which is a right boundary after the final W syllable, i.e. *crat* = crat.tϕ).

In the case of the two "long" compound-finals the final weak syllable should also be parsed (70–71). Naturally, if a 'stress-placing' suffix follows this foot, the place of the main stress may shift, e.g. *thèrapeutícian*. Here again we could claim that either the constraint in (67) ensures the parsing of the final null segment or that the compound-finals have pre-determined structure, manifested in a right boundary after the W syllable, similarly to (68).

(70) -anthrope = an.thro.pe =H_nσW)

phílanthròpe, philánthropos, philánthropy, philánthropinist , phìlanthrópia, phìlanthrópic, philánthropist, phìlanthropístic, philánthropism, philánthropine, philánthropinism, , philánthropòid, philánthropòidal, philánthropìze

(71) -therap- = the.ra.pϕ = LLW)

vàpothérapy, vàpothérapist, vàpothèrapéutic, vàpothèrapéutical, vàpothèrapéutically, thèrapeutícian, thèrapéutics, thèrapéuticness

A problem arises if the final foot is weak. Strong Retraction says that a binary foot is preferred before a (HW)#, which is not always the case, cf. (á.ris.to)(crat.tϕ) in (69). Examples in (72) show that the main stress regularly falls on the final non-weak foot, but this foot may be ternary.

(72) **Initially stressed compounds**

(72a) *héterodòx* = (hé.te.ro)(dòk.sϕ)

(72b) *héterodòxy* = (hé.te.ro)(dòk.sy)

If Strong Retraction is maintained, the above examples are ill-formed. B94's system would predict a different pattern (73). The final W syllable is parsed, as we pointed out above. The final foot in this case can only be binary (73a), because *(σHσ) feet are excluded from the foot inventory. A binary foot is built over the second two of the remaining three syllables because of the intrinsic weight of feet (B94: 152) and because of Strong Retraction (B94: 166), which expresses the preference for a binary foot before a weak foot. As a result, the stress pattern of the word should be **hetérodòx*, which is not the case.

(73) *heterodox* = he.te.ro:.dok.sϕ = LLHHW

(73a) LLH(HW)

(73b) LLH forms a binary foot: L(LH)(HW) = **hetérodòx*

If Strong Retraction is violated (which is quite often the case, e.g. *óxigenàte*), the problem disappears. B94 (p. 215) suggests that the general lack of binarity here is due to the fact that both the compound-initial and the compound-final should have the structure of an independent word. This, however, is only true for Type 1 compounds, according to F84. Strong Retraction may be overriden by Metrical Consistency (B94: 165 ff.), as in *óxigenàte,* which preserves the stress of *óxygen*. In other cases this violation is idiosyncratic (B94: 210, Fn. 16), as in *cátamaràn*. It might be proposed that in Type 2 compounds Strong Retraction is violated because of Metrical Consistency: the compound-initial tends to preserve the stress of its Type 1 counterpart (e.g. *héterodòx* preserves the stress of *hèterocýclic*).

As for the Extended Word-condition, it should not apply to Type 2 compounds for several reasons. Firstly, both elements of the compound are bound. Secondly, since we treat these words parallel to stem + suffix combinations, the "stem" (i.e. the compound-initial) should not have shortening if the Word-condition applied. However, shortening does occur in these words, cf. Type 1 *anti:climax* $_{US}$ vs. Type 2 *antidote*.

5.3 Summary

I have suggested that the difference between the stressing of Type 1 and Type 2 compounds is due to their different pre-determined parsing. In the case of Type 1 compounds the compound-initial constitutes a foot on its own and is treated as an individual word, due to the Extended Word-condition. Type 2 compounds are more similar to suffixed words with bound stems: here the compound-final has pre-determined parsing (similarly to suffixes), and the rest of the word is treated by ordinary Metrical Well-formedness constraints. I departed from B94 in saying that the pre-determined structure for Type 2 compound-finals is not necessarily a complete foot. Only the place of the rightmost foot boundary should be fixed: it must be after the final W syllable. This can be done by including this foot boundary into the representation of the compound-final or creating a constraint similar to B94's "Metrification of verbs" constraint, which says that the final null element is parsed in Type 2 compounds.

In B94's system there is a rank of structures (74) parallel to the Lexical Phonology model (e.g. Kiparsky (1982)). Let us examine where Type 1 and Type 2 compounds could be placed in this list. B94 claims (pp. 351–355) that the Word-condition holds for Germanic affixes, compounds and phrases.

(74) **The ranking of structures** (based on B94: 354)

Structures	**Compositionality**	**Listedness**	
underived words	min	max	
words derived by Latinate affixation	↓	↑	:
words derived by Germanic affixation	↓	↑	Word-condition
compounds	↓	↑	↓
syntactic phrases and sentences	max	min	

This rank scale reflects the principle in (75).

(75) **Structure-transparency Principle** (B94: 354)

A structure with a degree of compositionality *n* may not contain a structure with a degree of compositionality greater than *n.*

Now the question is where classical compound-initials are in this hierarchy and whether there is a difference between Type 1 and Type 2 compound-initials. Let us look at Type 1 compounds first. We suggested that the Extended Word-condition applies to Type 1 compounds as well. The compound-finals of these compounds may be words derived by Latinate affixation, e.g. *antimagnetic* (= anti+magnetic not *antimagnet+ic) and also words derived by Germanic affixation, e.g. *anti-nakedness*. Ordinary compounds may contain classical compounds, e.g. *anticyclone zone.* Similarly to Germanic affixation, Type 1 compounds can contain another Type 1 compound as their compound-final, e.g. *anti-hetero-sexual*. These facts suggest that Type 1 compounds should be between Germanic words and compounds.

Type 2 compounds, however, are not subject to the Word-condition, i.e. they should rank closer to underived words than Type 1 compounds. This assumption is also supported by the following. Type 1 compounds can contain Type 2 compounds as their second element, e.g. *anti-hypothermia.* This is not true the other way round, because Type 2 compounds have bound elements as their compound-final. Furthermore, since both elements are bound, it seems that from the point of further suffixation these words behave as non-derived items, because both

Latinate and Germanic affixes can attach to them, e.g. *holograph, holographic, holographless*. Given the above containment facts, we suggest to extend the hierarchy in (74) as follows (76).

(76) **The extended hierarchy of structures**

Structures	**Compositionality**	**Listedness**	
underived words	min	max	
Type 2 compounds	↓	↑	
words derived by Latinate affixation	↓	↑	:
words derived by Germanic affixation	↓	↑	Word-condition
Type 1 compounds	↓	↑	↓
non-classical compounds	↓	↑	
syntactic phrases and sentences	max	min	

To sum up the findings of Chapter 5, I have claimed that the influence of prefixes and classical compound-initials on stress can be reflected in their pre-determined foot structure. The following structures were suggested (77). Neutral dependent prefixes contain syllable boundaries only in order to prevent the remetrification of the final consonant. Neutral autostressed prefixes form a foot. Stress-repellent prefixes have no pre-determined structure. Type 1 classical compound-initials (CCI1) constitute a separate foot and act as a separate domain owing to the Word-condition. Type 2 compounds are similar to suffixed words: here the compound-final (CCF2) contains a pre-determined foot-boundary after the final null segment.

(77) **Pre-determined structures of prefixes and classical compounds**

Class			**Structure**	**Examples**	
Prefix	**Neutral**	**Dependent**	syllable boundaries	*co-* = co.	*cohàbitátion ~ còhàbitátion*
		Autostressed	foot	*mis-* = (ϕ.mis)|	*mìsàpprehénsion*
	Repellent		—	*com-* = com	*cómplicàte*
	Primary stressed		foot-head	*com-* = (com	*cómbine*$_N$
Classical Compound	**Type 1**	CCI1 forms a foot and a separate domain (Extended Word-condition)		*anti-* = (an.ti)|	*àntiballístic*
	Type 2	final ϕ parsed with CCF		*-graph* = gra.phϕ)	*hológraphy*

These structures account for the different stressing properties of the morphemes in question. Furthermore, in the case of Type 1 compounds the lengthening of the final vowel of compound-initials and the non-reduction of the initial syllable of compound-finals now follow from the fact that the two parts of the compound act separately, because the Extended Word-condition holds for them. This analysis treats prefixes and compound-forming elements parallel to B94's treatment of suffixes and recognises the role of prefixes in stress-assignment.

6. ANALYSED WORDS

The previous chapters (4 and 5) showed what patterns of pre-tonic secondary stress are possible in theory. The influence of prefixation and stress-preservation has been discussed. This chapter presents the analysis of 737 words that are primary stressed on their fourth syllable. The reason for analysing this set of words is that if main stress is on the fourth syllable, secondary stress can fall either on the first or on the second syllable. If primary stress is earlier, there is no such choice (though there are some exceptions, cf. regular *Chrìs.ti.á.na* vs. irregular *elèctrícity*). If primary stress is on the fifth or later syllable, the place of secondary stress also varies, but I considered the 737 items a large enough corpus for my purposes. The aim of the analysis is to check whether the predictions of the previous chapters are correct. Before the data are discussed, I repeat the predictions here (78)

(78) **Pre-tonic secondary stress in #σσσσ́ words: expectations** (= (19) of Section 4.5)

(78a) heavy syllables are more likely to be stressed than light ones
(78b) an initial heavy syllable will carry secondary stress
(78c) an initial light syllable may be unstressed
(78d) either the first or the second syllable will be secondary stressed
(78e) it is impossible that the first three syllables are unstressed
(78f) the third syllable will never carry secondary stress
(78g) it is possible that both the first and the second syllable carry secondary stress
(78h) H_n syllables may be unstressed despite their apparent heaviness
(78i) stem stresses are to be preserved if preservation does not result in a stress clash
(78j) affixation may influence the place of secondary stress

Another aim is to check whether the pre-determined parsings proposed for prefixes and classical compound-initials in Chapter 5 (cf. (77) above) are correct.

6.1 Data and methods

All the words that are main stressed on their fourth syllable have been manually selected from Wells.[29] This pronunciation dictionary is relatively recent, has both British and American pronunciation patterns, contains several possible variations of an item and has a corpus of approximately 75,000. One shortcoming of using this dictionary as a source is that post-tonic stresses (treated as tertiary by Wells) are marked only in compounds (if the compound-final is longer than one syllable), e.g. *protolanguage* /ˈprəʊtəʊ˳læŋgwɪdʒ/ and in words ending in *-ism,* e.g. *imperialism* /ɪmˈpɪəriə˳lɪzəm/. In the latter case, post-tonic stress is marked here because /ɪ/ is ambiguous between a full and a reduced vowel, e.g. *hit* vs. *America* are both transcribed with /ɪ/,

[29] If any word should be missing from my list, it has been left out by accident. If a stress-neutral ending was attached to an already existing item, e.g. *-ness,* I left the longer one out. (E.g. *hýpercorréct* is in the list, but *hýpercorréctness* is not).

though in the former the /ɪ/ is stressed (and thus full), while in the latter it is unstressed (and thus probably reduced). Following, Burzio (1994)(B94) in post-tonic position I generally regarded those syllables as secondary stressed that had a full (and sometimes long) vowel and were separated from the tonic syllable by at least one syllable (e.g. in *accelerà:te -ate* is secondary stressed but in *chrỳsèlephánti:ne -ine* is not, because it would break the alternating rhythm). As those words that have a full/long vowel after the tonic syllable are usually affixed, I could also rely on B94's pre-determined parsings of suffixes, e.g. *-ate* is analysed in B94 as (à:te), i.e. with secondary stress.

For each dictionary entry that had a variant primary stressed on the fourth syllable all the alternative variants which are relevant to the discussion have been recorded (79). Additionally, American patterns have been added, in order to see whether there are regular differences in this respect between the two dialects.

(79) **Recorded variants**

(i) variants in which the place of the primary or secondary stress is different, e.g. *applìcabílity ~ àpplicabílity;*

(ii) variants which differ in the length of a vowel (because vowel length counts in syllable weight), e.g. *di:gèstibílity ~ digèstibílity*, long vowel is marked by a colon;

(iii) variants in which an unstressed syllable may be pronounced full or reduced (because full vowel quality is thought to be the indication of stress by some authors, e.g. Nádasdy (1993), and this fact may be relevant to further analysis), e.g. *conglòmerá:tion ~ conglòmerá:tion,* the full vowel is underlined;

(iv) variants with syncope, e.g. *aficioná:do: ~ afic-oná:do*, syncope is marked by a hyphen (following Wells and B94).

Proper names—though very few in number—have also been included in the analysis, because these are often not formed by affixation (e.g. *Monòngahéla*), unlike the overwhelming majority of our words. In this case stem stresses cannot be preserved, which makes us expect that some other factors determine secondary stress placement. These items are mostly geographical names, and as such are generally treated as monomorphemic by phonologists. However, these may well be derived, compounded or phrasal elements in the source language, e.g. *Novosibirsk* = *novo* 'new' + *sibirsk.* Some of these words are treated as such even in English. For purposes of illustration, some items which are actually phrases and thus bear phrasal stress have also been looked at, but these are separated from the actual data and are not given analyses (see Appendix 6).

I marked primary and secondary stresses with accents (e.g. *nòn-àlcohólic*). If the vowel is long, it is marked by a colon, and full vowels that are not stressed are underlined (e.g. *hètero:séxism*). Some features that were not essential from the point of view of the stress pattern were encoded by additional marks (e.g. dialectal variant (marked by +), the first stressed syllable may be long (marked by ^) as in *rècriminá:tionø* ^+).

The selected variants have all been analysed in B94's manner. Final consonants were followed by the null segment (e.g. *èxtraposítionø*). Syllable and foot boundaries were inserted, e.g. (rè.cri.mi)(ná:.ti.o)nø ^+. This was partly done manually but several phases of encoding could be computerised because B94's system relies on the orthographic form of words. For example all CC sequences are separated by a syllable boundary (except for stop+liquid clusters and consonantal digraphs such as *cr* in *mìcrobiótic* = mì.cro.bi.ó.ti.cø and *th* in *màthematícian* = mà.the.ma.tí.ci.a.nø). Furthermore, B94 assigns pre-determined structure to endings, and some pre-determined structure was proposed in the previous chapter for prefixes and compound-initials. The parsing of these—especially of classical compound initials of Type 1, such as *mono-* = (mò.no:)|, and of certain endings, e.g. *-ation* = (á:.ti.o)nø—was also done by computer.

Another important phase of analysis could also be computerised: the weight of the first three syllables of each variant was calculated and the number of each appearing combination appears after each chart in the Appendix (see Appendices 1–5).[30] For example, (cà.pi.ta)(lís.ti.cø) has LLL, (hà:r.mo.nì:)(zá:.ti.o)nø has HLH, while (hà:r.mo.ni)(zá:.ti.o)nø has HLL as the first three syllables. As one word may have variants with different syllable structures (as *hà:rmonizá:tion,* for example), the total number of syllable combinations exceeds the number of rows (i.e. dictionary entries) in a chart. However, one syllable structure may appear in more than one variant of a word, e.g. two variants of *glòttalizá:tion* have the structure HLL: (glòt.ta.li)(zá:.ti.o)nø ~ (glò:t.ta.li)(zá:.ti.o)nø, i.e. the total number of syllable combinations does not equal the number of variants. In 6 variants (e.g. *bènzo:d-á:zepi:ne*) Wells marks the loss of a vowel, which is marked by a hyphen in the Appendix. As it would have complicated the analysis and would not influence the results considerably, I did not treat it as the loss of a syllable, but these syllables were counted as light (L). It was important to look at the syllable weights of the first three syllables because on the basis of these statistics we can see weather B94's predictions on ideal parsing are correct. For example, we expect that if the first three syllables form a ternary foot, ideally it will be (σLL).

In the course of the analysis some items turned out to be 'ill-formed' in B94's sense, i.e. violating Metrical well-formedness. These were marked by bold face, and if the variant in question proved to be problematic in my analysis as well, an asterisk was also added. For example the variant (**àn.thro:.po:**)|(cén.tri.cø)* contains a foot *(σHσ), which is not an acceptable foot. Another example is *à:uto:eróticìsmø,* which suffers from the same if analysed as (**à:u.to:.e**)(ró.ti)(cìs.mø) in B94's manner, but is well-formed if the compound-initial is analysed as a separate stress-domain as proposed here, (**à:u.to:**)|**e**(ró.ti)(cìs.mø). The problematic words will be discussed in detail in Sections (6.3.1–6.3.5) below.

After encoding, the items were arranged into groups according to the patterns displayed, thus giving several shorter lists (see Appendices 1–5). Words are in alphabetical order and are numbered. Each appendix corresponds to one group (see the discussion of patterns in Section 6.3 below). Inside one group there are separate charts: suffixed/prefixed words (e.g.

30 I want to thank my husband, Novák Attila, for writing a program for this task.

bèautificátion, òverreáction), Type 1 classical compounds (e.g. *àntedilúvian*), Type 2 classical compounds (*cìnematógraphy*), monomorphemic items (e.g. *àbracadábra*) and phrases (*àuto-da-fé*). If there are proper names in a chart, these are given at the end of the table and are separated from the list by a double boundary. If a chart is missing, it is because there were not words in that category in the group in question. Each chart is followed by the statistics of the appearing syllable weights, which are summarised at the end of every group.

In order to be able to see the effects of Stress Preservation (Metrical Consistency), the corresponding stems have also been selected. In some cases it is very difficult to decide what the stem is. If in doubt, I relied on the Oxford English Dictionary (1994)(OED). I always tried to find a stem which was different from the actual item only in one affix. However, in the case of words like *dissemination,* there are two options: either the suffix or the prefix may be removed, giving two results: *disseminate ~ semination,* and morphological factors cannot always decide (e.g. *dis-* can attach to verbs (*dis-* + *seminate*) and nouns (*dis-* + *semination*) as well, as in *disbelief, disconnect*). In most cases the two options are identical in their distribution of stressed syllables, so the item in question will show stress preservation in both cases: *dissèminátion: disséminàte ~ sèminátion*. For words that have both a suffix and a prefix, the prefix, the suffix and usually the prefixed stem were given. In the column labelled *Morphemes* in each chart the pre-determined parsings of the last suffix (e.g. *atio)nø*), of the prefix (e.g. *un.*), of the compound-initial (e.g. *(mono)|*) or of the compound-final (e.g. *graphy)*) were given.

For purposes of illustration, (80) shows a small part of one of the charts in the Appendices (1–5). The headlines present the type of words (e.g. *Suffixed / prefixed word*) and in the case of Group III, the name and the patterns of the subgroup (e.g. *Group III/b: Patterns 3~2*) are also displayed. The first column gives the most frequent British pronunciation, the second column gives all other variants, in the order Wells provides them. The American pronunciation, if different from that in the first column, is shown in the third column. If the *American* column is empty, it means that the pronunciation is the same as the most frequent British variant. The column with the heading #σσσ contains the weights of the first three syllables. The *Morphemes* column contains the stem and the relevant affixes, compound-initials or compound-finals. Only stresses are marked in the stem (e.g. pre:déstinà:te), while affixes, compound-initials and compound-finals are given with their pre-determined parsing, i.e. with foot boundaries (e.g. ity), pre, (àn.te)|, he:dronø)). For monomorphemic items the last column is labelled *Stem*, and some information on the stem is given (e.g. *unknown:* word of unknown origin, N: proper name etc.).

(80) **Charts in the Appendices**

Suffixed / prefixed word	**Group III/b: Patterns 3~2**			
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
1. par(tì.cu)(lá.ri.ty)		1 (ø.pà:r)(tì.cu)(lá.ri.ty)	H_nLL / HLL	partícular, ity)
2. pre:(dès.ti)(ná:.ti.o)nø	pre(dès.ti)(ná:.ti.o)nø, (ø.prè:)(dès.ti)(ná:.ti.o)nø		HH_nL / LH_nL	pre:déstinà:te, pre, atio)nø

Classical Compound 1				
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
1. (àn.te)|di(lú:.vi.a)nø	(àn.te)|di:(lú:.vi.a)nø		H_nLL / H_nLH	dilú:vian, (àn.te)|

Classical Compound 2				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
1. (èn.ne.a)(hé:.dro.nø)	(èn.ne.a)(hé.dro.nø)		H_nLL	he:dronø)

The header and footer section of each page of the Appendix contains detailed information about what the codes mean in the charts. If a certain column contained no data (for example all American variants were identical to the first British one), it was deleted to save space.

6.2 General problems

This section discusses those words that are problematic in my corpus but the problem is only loosely connected to secondary stress assignment. Such words appear in all patterns and fall into three categories: (i) the primary stress is on a final weak foot (e.g. *phò:togravú:re*); (ii) the word contains a cluster that cannot be parsed (e.g. *trànsfe:rabílity*), (iii) the ending *-ism* gives rise to a monosyllabic foot, i.e. word-internal stress clash (e.g. *hètero:séxìsm*). The problems are discussed below but I do not propose a solution for them. These words are marked by bold face (if also problematic for B94) and an asterisk in the Appendices, e.g. Ty(rò:.li)(**én.ne**)*, (ø.trà**ns**)(còn.ti)(nén.ta)lø*.

If the primary stress falls on a rightmost weak foot as in *fànfaroná:de* = (fàn.fa.ro)(ná:.de) = (σLσ)(HW), it violates the constraint of Primary Stress (B94: 16). B94 (p. 216–217) claims that these items exceptionally "follow a special version of the principle for primary stress [...], one that makes no reference to 'weak' feet, and simply assigns stress to the rightmost foot." The words that display this behaviour in our corpus are predominantly French borrowings that keep the French stress-pattern (other examples include *ròdomontá:de, àquamarí:ne, màdemoisélle, tèlepherí:que*). The endings (which were also influenced by French) *-ese, -ee, -eer* also behave this way, e.g. *Sènegalé:se, officialé:se, sù:pervi:sé:e, elèctionéer.*[31] Another class of words that are primary stressed on a weak foot are disyllabic verbs that form a compound with a classical compound-initial, e.g. *à:uto:destrúct, sù:perimpó:se, sù:perinténd.* The stem verbs are parsed as *destrúct* = des(trúc.tø) = σ(HW), i.e. the primary stress falls on a weak foot even in this case, but if the weak foot is the only one in the word, this is regarded to be regular. This stress pattern is kept in the compounded forms, probably because of Anti-Allomorphy.

There are some words with clusters that cannot be syllabified well, e.g. *ò:versubscrí:be, sànctificá:tion, trànsliterá:tion.* In B94 sC clusters are generally syllabified as *s.C.* In Kaye (1992) these sequences are always heterosyllabic. However, B94 (Fn. 18 on p. 61) suggests that in

[31] These are Liberman—Prince (1977)'s [+F] endings.

these sequences (his examples include *livingston, construction*) the *s* is tautosyllabic with the following obstruent. This does not solve the problem of *sànctificá:tion.*

Words ending in *-ism,* e.g. *hò:meo:mó:rphìsm, hètero:séxìsm* are problematic if we follow Wells' judgements. These are given with tertiary stress on the ending by Wells, which is regarded as post-tonic secondary here. This treatment, however, is problematic: the ending *-ism* is preceded by the tonic syllable in a number of our examples, though the tonic syllable may also be two syllables away, as in *hò:mo:eróticìsm* = (hò:.mo:)|e(ró.ti)(cìs.mø). This gives rise to a monosyllabic foot as in *(hò:.me.o:)|(mó:r)(phìs.mø), which is ill-formed. One solution is to suppose that the stem is preceded by a null element and thus the primary stress falls on a degenerate foot, which is normally not allowed as in ?(hò:.me.o:)|(ø.mó:r)(phìs.mø) (on this possibility see Section 8.3). The other solution is provided by B94 (p. 212): he claims that there is no stress on the ending *-ism* and it is parsed as is)mø. Thus he analyses the word *metabolism,* given as /məˈtæbə̥lɪzəm/ in Wells, as me(tábolis)mø. I consider both solutions equally exceptional and thus take no choice. The words with *-ism* are marked by an asterisk in my lists.

6.3 Groups and patterns

This section overviews how the analysed data have been arranged into smaller sets. The overwhelming majority of words followed one or more of three patterns, shown in (81). This is in accordance with our expectations: secondary stress either appears on the first, or on the second, or on both syllables but never on the third one (cf. (78c–g)). One word may follow more than one pattern (e.g. Pattern 1: *àcademícian* ~ Pattern 2: *acàdemícian*). This is the reason why the total number of words in (81) exceeds the actual number (737) of analysed lexical entries. In the following discussion 'word' will mean one dictionary entry, while 'variant' will mean one possible pronunciation of a certain word.

(81) **Patterns displayed by #σσσσ́ words**

	Pattern	Example	Number of words
Pattern 1	#σ̀σσσ́	(à.bra.ca)(dá.bra)	450
Pattern 2	#σσ̀σσ́	ac(cè.le)(rá:.ti.o)nϕ	326
Pattern 3	#σ̀σ̀σσ́	(ϕ.à:)(chòn.dro:)(plá:.si.a)	104
Total			880

The table in (82) below shows how words have been grouped and the number of words in each group. Group I contains those words that are always secondary stressed on their first syllable, i.e. follow only Pattern 1, e.g. *bèautificátion*. In Group II we find those items which follow only Pattern 2, i.e. are secondary stressed on their second syllable, such as *accèlerátion*. Group III is a more heterogeneous set: these words have one variant with adjacent initial stresses, following Pattern 3. Three subgroups had to be established inside Group III. In the first one,

Group III/a, the words have only one variant, which follows Pattern 3, e.g. *dècòmposítion.* The second subgroup contains words with two variants: one follows Pattern 3 and the other follows Pattern 2, e.g. *àffòrestátion ~ affòrestátion.* Subgroup III/c has words which follow all three patterns, e.g. *dìssìmilárity ~ dissìmilárity ~ dìssimilárity.* These words have been grouped together because there might be a reason for the appearance of adjacent initial stresses (i.e. similar syllabic makeup, similar endings etc.). Group IV contains words that have two stress patterns: one pronunciation follows Pattern 1 and the other Pattern 2, e.g. *àmbassadórial ~ ambàssadórial*. There are some words, belonging to Group V, which again follow more than one pattern, but at least one of these does not conform to any of patterns 1, 2 or 3—usually the main stress may move away from the fourth syllable, e.g. *ambàssadréss* (Pattern 2) ~ *ambássadrèss ~ ambássadress*.

(82) **The number of words in the groups**

Group		Pattern	Suffixed / prefixed		CC1		CC2		Mono-morph.		Total		Percentage
I		**1**		141		151		51		23		**366**	50
II		**2**		151		6		17		7		**181**	24
III	**a**	**3**	22		—		1		1		24		
	b	**3~2**	66	93	2	2	5	6	—	1	73	**102**	14
	c	**3~2~1**	5		—		—		—		5		
IV		**1~2**		25		3		17		8		**53**	7
V		**1**	6		5		1		8		20		
		2	4	14	—	6	1	2	2	13	7	**35**	5
		3	—		1		—		—		1		
		1~2	3		—		—		3		6		
		3~2	1		—		—		—		1		
Total				**424**		**168**		**93**		**52**		**737**	100

Each section that follows (6.3.1–6.3.5) corresponds to one Group of words. I shall examine the following questions with every group (83)

(83) **Questions examined**

(i) What syllables can build well-formed feet?

(ii) Does stress preservation work?

(iii) If stress preservation is inapplicable, is there a reason why the pattern in question is attested?

(iv) Are the proposed representations for prefixes and compound-initials correct?

6.3.1 Group I—only Pattern 1: #σ̀σσσ́

This group is the largest: approximately half of the analysed words (366 items) are secondary stressed on their first syllable (see Appendix 1). More than one third of these are suffixed and/or prefixed (e.g. *cànnibalístic*), about half of them are Type 1 compounds, 14 per cent are Type 2 compounds and the rest (6 per cent) are monomorphemic. In those cases where the word is not a Type 1 compound (i.e. where the two parts are not treated separately), there is a ternary foot before the main stress. First these words are discussed.

Ideally, a ternary foot is (σLσ), i.e. a foot with a light medial. There is one exception to this constraint: syllables closed by sonorants or *s* (marked H_n) count as light in unstressed position (B94: 58, 62, 74). This means that the word *rècommendátion* will be parsed as given in (84).

(84) **H_n syllable in unstressed position**

(rè.com.men)dá:tion = $LH_nH_n \approx$ LLL = (σLσ)

The first syllable can be either heavy or light, but the third one is preferably light, because heavy syllables ought be aligned with stresses (because of Metrical Alignment). Table (85) shows the logically possible ternary feet that may appear as the first foot of these words. The number of possibilities is so high because H_n syllables count as light in unstressed position and as heavy in stressed position, i.e. foot-initially. In the last column I give the number of occurrence for each foot type in Group I, subtracting the chart of Type 1 compounds from the chart of the whole Group I (see Appendix 1 for these tables of occurrences).

The feet in (85a–s) are all well-formed, but not to the same degree. The three shaded lines show the ideal patterns LLL, H_nLL, HLL, which actually occur most frequently (67+35+62= 164 out of 289, which is 57 per cent). These are ideal because they have true light syllables in non-head position, i.e. (σLL). Concerning H_n syllables, B94's remarks (p. 138) suggest that (σH_nσ) feet are not as well-formed as (σLσ) ones. This prediction is borne out: (σH_nL) appears in 5 per cent (15 occurrences, see (85c, g, k)). Patterns (85m–s) all contain a true H syllable that is not a foot-head (i.e. σσH), violating the Metrification of H syllables. This violation seems to be not very serious, because for example LLH and HLH both occur 31 times, which is the largest number after the number of the ideal patterns. The foot (σσH) occurs 86 times (rows (85m–s)), which is 1/3.

(85) **Well-formed ternary feet (σLσ) in Group I (except for CC1)**

	Weight that counts	Actual σ structure	Example	No. of occurrence
(85a)	LLL	LLL	(cà.pi.ta)lístic	67
(85b)		LLH_n	(dò.cu.men)tá:tion	13
(85c)		LH_nL	(lè.ger.de)má:in	6
(85d)		LH_nH_n	(rè.com.men)dá:tion	1
(85e)	HLL	HLL	(bè:au.ti.fi)cá:tion	62
(85f)		HLH_n	(pà:r.lia.men)tá:rian	3
(85g)		HH_nL	(mò:.der.ni)zá:tion	4
(85h)		HH_nH_n	(ò:.ver)|indúlge[32]	1
(85i)		H_nLL	(càn.ni.ba)lístic	35
(85j)		H_nLH_n	(sèn.ti.men)tálity	1
(85k)		H_nH_nL	(phàn.tas.ma)gó:ria	5
(85l)		$H_nH_nH_n$	(ø.mìs)in.for.má:tion[33]	1
(85m)	LLH	LLH	(và.le.dic)tó:rian	31
(85n)		LH_nH	(frà.ter.ni:)zá:tion	4
(85o)	HLH	HLH	(tè:r.gi.ve:r)sá:tion	31
(85p)		HH_nH	(òp.por.tu:)nístic	3
(85r)		H_nLH	(òs.te.o:)páthic	13
(85s)		H_nH_nH	(crỳs.tal.li:)zá:tion	4
(85t)	*LHL		(chà.rac.te)rístic, (hò.mo:.ge)néity	2
(85u)	*HHL		(òc.to:.ge)nárian, (tsù:.tsu:.ga)múshi	2
Total				289

We would expect that Pattern 1 (σ̀σσ) is only attested if the medial syllable is not H. There were four variants with a *(σHσ) foot. Two of these *tsù:tsu:gamú:shi* and *chàracterístic* cannot be analysed as compounds in any way. As suggested in B94 (p. 308), to avoid the ill-formed foot, these can only be given an exceptional analysis: the third syllable must be left unparsed (chà.rac)te(rís.ti.cø) and (tsù:.tsu:)ga(mú:.shi)*. Among Group 1 words there are two Type 2 compounds, *òcto:gená:rian* and *hòmo:gené:ity*, which have a heavy second syllable. These words were regarded as Type 2 Compound because there are no such free stems as **genarian* and **geneity*. The compound-initials *homo-* and *octo-* appear with free stems (i.e. in Type 1 compounds), e.g. *hò:mo:eróticìsm*, *òcto:syllábic*, and have the pre-determined parsing

[32] This word contains the prefix *over-*, which is best analysed in a similar vein to Type 1 compound-initials, i.e. as a separate foot, because it attaches to free stems quite freely. It is in the chart because it is a prefixed word.

[33] In the category being discussed this was the only word with $H_nH_nH_n$ syllable structure. This word is problematic for our analysis but is regular if the prefix *mis-* does not constitute a foot on its own, as I shall point out later in this Section.

(ho.mo:)| and (oc.to:)| respectively. The words *hòmo:gené:ity* and *òcto:gená:rian* might follow this pattern by analogy.

Now some remarks about each of the subcategories are in order. Let us first discuss suffixed/prefixed words (134 items). There are certain suffixes that appear in several words of Group I. These are given in (86).

(86) **Frequent endings in Group I**

Ending		No. of words		Percentage (Total 141)	Example	Stem
ation	*ization*	51	97	69	(cà.na.li:)(zá:.ti.o)nø	*cánalìze*
	fication	38			(bè:au.ti.fi)(cá:.ti.o)nø	*béautify:*
	other	8			(cèn.tri.fug)(á:.ti.o)nø	*céntrifu:ge*
ity	*bility*	8	11	8	(sè.pa.ra)(bí.li.ty)	*séparable*
	other	4			(sèn.ti.men)(tá.li.ty)	*sèntiméntal*

69 per cent of suffixed Group I words contain the complex ending *-ation.* Fudge (1984: 61) claims that in these words secondary stress will fall two syllables away from the primary stress due to the pre-stressed 2 *-ate* "no matter what the derivational structure of the word is". The 97 words above contradict this claim: secondary stress is three syllables away from the main stress. This deviation is due to Stress Preservation: all stems are stressed on their first syllable, which means it does matter what the derivational structure of the word is.

Half of these *-ation* words end in *-ization,* i.e. the stem is a trisyllabic *-i:ze* word such as *cánonì:ze.* In these stems primary stress is always on the first syllable, because there must be at least one unstressed syllable between two stresses. This stem stress is preserved in the *-ation* word (e.g. *cànoni:zá:tion*). The complex ending *-ization* has two pronunciations: *-ization*$_1$ /aɪˈzeɪʃᵊn/ ~ *-ization*$_2$ /ɪˈzeɪʃᵊn/. The first one is the standard British variant: *cà:rboni:zá:tion* /ˌkɑːbənaɪˈzeɪʃᵊn/. The second one also appears in British English, as in *cà:rbonizá:tion* /ˌkɑːbənɪˈzeɪʃᵊn/ (exception: *mìnimizátion*) and is the only possible pronunciation in American. In the case of the first variant, the main stressed syllable is preceded by a H syllable, which should preferably be aligned with a stress. B94 (p. 265–267) says that the stem of these words with the ending *-i:ze* = (ì:.ze) has post-tonic secondary stress on the ending, as in *cá:rbonì:ze* = (cá:r.bo)(nì:.ze) = (Hσ)(HW). Thus the word has two stem stresses. The derived word ending in *-i:zation*$_1$ can be analysed in two ways: it either has an unstressed *-i:-* and there is a ternary foot before *-ation* (87a) or the null segment at the end of *-ì:ze* is not replaced by the first vowel of *-ation* and there are two binary feet before the main stress, copying the stress of the stem (87a). Both parsings contain acceptable feet. The variant *-ization*$_2$ (with a short *-i-*) has only one analysis given in (87c).

(87) **The ending** *-ization* (based on B94: 265–267)

-i:zation$_1$

(87a) ternary foot (σ̀Li:)(zá:tion (drà.ma.ti:)zá:tion

(87b) 2 binary feet (σ̀L)(ì:.ze)(á:tion (drà.ma)(tì:.ze)á:tion

-ization$_2$

(87c) ternary foot (σ̀Li)(zá:tion (drà.ma.ti)zá:tion$_{Am}$

(87b) preserves both stem stresses and the parsing itself shows that there is a difference between the pronunciations *-i:zation*$_1$ and *-ization*$_2$. (87a), however, does not need a syllable with a null vowel in the middle of the word, but has a regular ternary foot instead. This parsing, which does not show preservation, is well-formed because a H syllable is allowed foot-finally, though it is dispreferred. Both parsings (87a–b) are considered to be equally well-formed by B94. In Appendix 1 (87b) is used because this parsing shows the difference between the British and the American variant. It must be noted, if only this analysis were accepted, the British pronunciation of *-ization* words would not belong to Pattern 1, since there are two feet before the tonic syllable. If *-ize* is stressed, there is a stress clash on the surface, as in *drà<u>matì:zá:</u>tion*, which is dispreferred. The parsing (87b) is still kept in the Appendices because it calls attention to the difference between the two pronunciations of *-ization* words.

40 percent of *-ation* words of Group I end in *-fication,* e.g. *clàrificá:tion.* The stem of these words is a verb ending in *-fy,* e.g. *clárify:.* The ending *-fy* is considered to be pre-stressed 2 by Fudge (1984: 73)(F84), i.e. primary stress falls two syllables before the ending. In trisyllabic words primary stress will always be on the first syllable. B94 (p. 212) gives the pre-determined parsing *-fy* = fy:). It must be noted that the parsing σ), predicts a pre-stressed 2 pattern only if the preceding syllable is light (e.g. *-y* = y), as in *monópoly* = LLLW). If the preceding syllable is heavy, it would attract stress. A similar observation is made in B94 (p. 212) in connection with *-able* = a)ble, for example. As for words ending in *-fy,* F84 (p. 73) notes that the ending is "almost always preceded by an insert *-i-* (occasionally *-e-*). A long vowel in the preceding syllable is shortened.". This means that *-fy* is always preceded by a light syllable and will be stressed two syllables away, in our case on the initial syllable of the stem, as in *móllify:* (stem of *mòllificá:tion*). Therefore stem stress is again preserved in the derived word.

The situation is similar with words ending in *-bility,* which have an *-able* = a)ble (B94: 212) stem. Primary stress is on the first syllable of all *-able* stems in Group I, as in *pálatable* (stem of *pàlatabílity*). Again, these stem stresses are preserved.

There is one problematic word in this group, namely *mìsinformá:tion,* which is given without stress on *-in-* in Wells. This means that the word does not preserve the stress of *ìnformátion,* and that the parsing of *mis-* as (ø.mis) does not give a well-formed parsing here (*(ø.mìs)<u>in.for</u>(má:.ti.o)nø), because two syllables are left unparsed. A ternary parsing (i.e. (mìs.in.for)(má:.ti.o)nø) is well-formed. I consider this word as an exception in the sense that it does not take the pre-determined parsing of the autostressed prefix.

As for Type 2 compounds (51 words), the suggested parsing for the compound-finals cannot really be tested, because all words are further suffixed. There are words which are suffixed by *-ic, -al, -ity*, i.e. suffixes that occur with non-classical items as well. Examples include *ìdeográphic* = (ì.de.o)(grá..phi.cø), *mèthodológical* = (mè.tho.do)(ló.gi.ca)lø. Other words are suffixed by Latin or Greek suffixes, such as *-ia*. These, similarly to other suffixes, can be assigned pre-determined structures. This structure is generally a right boundary after the suffix, i.e. these parse the final null segment. Examples are *-itis* = i.ti.sø), as in *pèrito:nítis* = (pè.ri.to:)(ní.ti.sø) and *-ia* = i.a), as in *ìdio:glóssia* = (ì.di.o:)(glós.si.a). An exception is *-iasis* = i.a.si)sø, as in *èlephantí:asis* = (è.le.phan)(tí:.a.si)sø. This ending appears only in this word. All words have regular primary stressed feet, with the exception of *tèlegra:phé:se* with the ending *-ese,* which has been discussed in 6.2 above. The three syllables preceding the main stress conform to the (σLσ) template, except for *hòmo:gené:ity* and *òcto:gená:rian* discussed above, which might follow the pronunciation of Type 1 compounds analogically.

There are very few words which I regarded as monomorphemic (23, out of which 11 are names).[34] Several of these words are primary stressed on a final weak foot (cf. Section 6.2 above), and as such are exceptional (e.g. *èlicampá:ne, mùlligatá:wny, rècitatí:ve*).

Out of the 366 words belonging to Group I, 202 are classical compounds, which is 55 percent. Three quarters of these (151 items) contain a free stem, i.e. are Type 1 compounds (CC1), such as *àntepenúltimate*. I suggested in Chapter 5 above that classical compounds should have some pre-determined structure. If the word is a Type 1 compound, the compound-initial is treated separately and forms a foot on its own (cf. Section 5.2 above), e.g. *anti-* = (an.ti), as in *àntimacássar* = (àn.ti)|ma(cás.sa)rø. The head of the foot is the first syllable of the word, i.e. secondary stress will fall here. If the compound-initial is disyllabic (in 133 words), there will be an unparsed syllable between the compound-initial and the primary stressed foot. Unparsed syllables are not allowed word medially, but I proposed that the compound-initial and thus the compound-final as well form separate domains (marked by | in the analyses). Domain-initially one syllable may be left unparsed, as in the monomorphemic *Jemima* = Je(mí.ma) /dʒɪˈmaɪmə/. As B94 does not treat compound-initials in this manner, his analysis would be different: (àn.ti.ma)(cás.sa)rø, a ternary foot before the tonic syllable.

B94's ternary analysis gives satisfying results for most words (e.g. (à:r.chi.tec)(tó.ni.cø), (phò:.to.e)(léc.tri.cø)), but it would be problematic for those compound-initials in which second syllable of the compound-initial contains a long vowel (which is /əʊ/ in all cases except for *anti-* /æntaɪ/), as in (mò.no:)|ge(né.ti.cø). If this word is given a ternary analysis as in *(mò.no:.ge)(né.ti.cø), the first foot is ill-formed *(σHσ), similarly to words like *(chá.rac.te)(rì:ze). B94 (p. 308) suggests that in these words the third syllable should be left unparsed exceptionally, i.e. (chá.rac)te(rì:ze), in order to avoid the ill-formed configuration. In the case of Type 1 compounds the analysis proposed here is better than that of B94 because the unparsed

[34] Complex place names like *Àshton—in—Má:kerfì:eld, Czècho-Slovákia* and words that originate in phrases, e.g. *nèvertheless* were put in the phrasal section, cf. Appendix 6.

syllable appears at the beginning of a domain, i.e. it is not exceptional. Table (88) shows the number of variants that would be exceptional in B94's analysis and are regular if analysed in our manner.

(88) **Type 1 compounds: #σHσ words problematic for B94**

CCI	Br.	Am.	CCI	Br.	Am.	CCI	Br.	Am.
anthro:po:	3	—	hy:po:	1	1	philo:	1	1
anti$_{Br}$ anti:$_{Am}$	—	14	macro:	2	2	phy:lo:	1	1
asco:	1	1	mi:cro:	1	1	phyto:	1	1
a:uto:	8	7	mo:rpho:	4	4	psy:cho:	7	7
benzo:	3	1	mono:	3	3	ro:to:	1	1
bi:o:	1	1	myo:	1	1	se:ro:	1	1
ge:o:	1	1	ne:o:	2	2	toxo:	2	2
glotto:	1	1	neuro:	1	1	vaso:	2	2
ho:mo:	4	2	octo:	1	1	**Total**	**121**	
hy:dro:	3	2	patho:	1	1			

There are 28 compound-initials with a heavy second syllable among Group I words, and the total number of variants that are exceptional for B94 is 121. Out of these only one compound-initial, viz. *anthro:po:-,* which is problematic for our analysis. Here an optionally long vowel appears in the second and the third syllable and all belong to the compound-initial (89).

(89) *anthropo-* /ˌænθrəʊpəʊ/

an.thro:.po(:) = HHσ = ?(an.thro)po|

an.thro.po(:) = HLσ= (an.thro.po)|

If the first *o* is pronounced long, we get a sequence HHσ, which cannot form a ternary foot. A possible solution is to parse this as (H σ)σ|, i.e. to leave the final syllable unparsed before the domain boundary. This would be parallel to the parsing of *-anthrop-,* discussed in 5.2.2.2. This analysis here, however, is problematic if both *o*-s are pronounced long, since at the end of words only weak syllables can be extrametrical. If the medial syllable is pronounced short, the problem disappears. Wells does not mark either of the syllables with *o* as stressed, though pre-tonic secondary stresses are marked in his dictionary. Therefore parsing this sequence as two feet is not possible either. The problem needs further research.

The analysis of Group I words suggested that Stress Preservation is a deciding factor in secondary stress placement, which was primarily demonstrated by words ending in *-ation.* Furthermore, the foot-typology of B94 proved to be correct, though some words like *chàracterístic* violated the constraint against heavy medials in ternary feet. It seems that the constraint against the metrification of H syllables as non-foot-heads is not very strong, because a relatively high number of words had (σσH) feet (1/3 of occurrences, while in 2/3 the foot is either (σσL) or (σσH_n)).

In the 74 words where stress-preservation is not relevant (51 Type 2 compounds and 23 monomorphemic items) only three had variants with a σHσ configuration before the main stress. Out of these, two might be preserving the stress of their Type 1 compound counterpart (*hòmo:gené:ity, òcto:gená:rian*) and one is a Japanese loan (*tsù:tsu:gamú:shi*) that appeared in the language around 1906 (OED). Since the ideal binary foot is (Hσ), it is not surprising that these have a ternary rather than a binary foot as their first foot. This is due to the light syllable in the middle: (σLσ) parsing is better than σ(Lσ), though the latter is also a well-formed foot. The analysis of compound-initials as separate stress domains made it possible to regard words like *è:go:centrícity* regular, while in B94's analysis these would be exceptional. Classical suffixes parsing the final null segment also gave satisfactory results.

6.3.2 Group II—only Pattern 2: #σσ̀σσ́

The second largest group in the corpus was formed by examples in which the primary stressed syllable is preceded by a binary foot (181 words, 24 per cent), see Appendix 2. Binary feet in non-rightmost position have no restrictions on the weight of the syllables: both can be H or L as well, i.e. (σ̀σ). The first syllable of these words will remain unmetrified (90).

(90) **Possible parsings of σ(σσ)**

i(mà.gi)(ná:.ti.o)n	= L(LL)
e(vìs.ce)(rá:.ti.o)n	= L(H_nL)
a(dàp.ta)(bí.li.ty)	= L(HL)
res(pèc.ta)(bí.li.ty)	= H_n(HL)
ac(cè.le)(rá:tion	= H(LL)

B94 (p. 155) claims that unmetrified H syllables are dispreferred, only L ones should be unstressed at the beginning of words. H syllables should get secondary stress, as illustrated in (91).[35]

(91) **Initial syllables** (B94: 155)

#L(	pro(dúc. ti.o)nϕ	/prəˈdʌkʃᵊn/
#(ϕ.H)(	(ϕ.prò:)(dúc.ti.o)nϕ	/ˌproːˈdʌkʃᵊn/

This claim predicts that at the beginning of words there should be no unstressed heavy syllables at all. There will be light unstressed syllables with a short vowel and heavy stressed syllables with a long vowel as in (91). This claim seems to be too strong as noted in Subsection 5.1.1.1 above and as the words belonging to Group III (discussed in 6.3.3)) will show. B94 himself has words which have an unstressed H_n initial syllable, though these syllables count as

[35] This problem is partly due to the fact that it is not clear when B94 regards a syllable with a full vowel stressed and unstressed. As for initial syllables, I followed Wells (1990).

light if unstressed. Initial H syllables also appear in B94 of the type $CVC_{obstr.}$. Some examples are collected in (92).

(92) **Initial unstressed H syllables in B94**

	H_n(	Page	H(	Page
split geminate	col(lègi)(álity)	175	ap(pósiti)ve	305
	syl(làbifi)(cátion)	180	ac(cómpani)(mèntø)	305
	mil(léna)ry	102	af(fí:rmø), ap(plý:ø)	298
C_1C_2	con(vìvi)(álity)	175	ex(pí:ry)	305
	in(còrrigi)(bílity)	180	ad(vánta)ge	305
	ar(tìcu)(láto)ry	102	ab(nórma)l	302

It seems the constraint *#H((B94: 155) should be rephrased as "#H(is dispreferred" but even this less severe constraint should be ranked relatively low, since a large number of words violate it. It is true, however, that initial heavy syllables are often the result of B94's convention of syllabifying orthographical geminates into separate syllables. In most cases these geminates are *l, n, r,* i.e. sonorants, and the resulting syllable will be a H_n syllable that can count as light. When a non-sonorant consonant is in this position, the syllable can only be analysed as heavy (93). In Group II, most of the initial heavy syllables are 'truly' heavy.

(93) **Initial unstressed H syllables in the corpus**

True heavy syllable	**Heavy syllable with a split geminate $C_{obst.}.C_{obst.}$**
<u>adj</u>ùdicátion	<u>acc</u>èlerátion
<u>au:</u>thòritárian	<u>ec</u>clèsiástic
<u>bact</u>èriólogy	<u>sugg</u>èstibílity
<u>de:</u>bìlitátion	

The chart in (94) shows what type of syllables occurred in Group II in the first three positions. Only 43 per cent has a light syllable initially, 19 per cent contains a H_n syllable, which counts as light here, and 38 per cent has a H syllable in initial position. If we keep to the assumptions of B94, this 38 per cent is irregular. If, however, we allow one unparsed initial H syllable, these become regular. As Group III will show, there is often variation between a heavy stressed and a heavy unstressed syllable word-initially in Wells, as in (ø.cò:)(hà.bi)(tá:.ti.o)nø ~ co:(hà.bi)(tá:.ti.o)nø.

(94) **Syllable types before the primary stress**

	Example	No. of occurrence	All	Percentage
LLL	a(pò.ca)lýptic	43	94	43
LH_nL	a(dùl.te)rá:tion	17		
LH_nH	la(rỳn.go:)gráphic	4		
LHL	pre(dìc.ta)bílity	22		
LHH	e(rỳth.ro:)mýcin	8		
H_nLL	as(sì.bi)lá:tion	20	42	19
H_nH_nL	in(còr.po)rátion	7		
H_nHL	in(tè:r.pre)tátion	14		
H_nHH_n	en(vì:.ron)méntal	1		
HLL	co:(à.gu)lá:tion	33	82	38
HLH_n	ad(mì.nis)trá:tion	1		
HH_nL	ad(mìs.si)bílity	17		
HH_nH_n	e(xàs.cer)bá:tion	1		
HHL	pe:r(fèc.ti)bílity	30		
Total			218	100

All the 151 derived items were found to be stress-preserving, i.e. stem stresses were on the second syllable. Similarly to Group I words, this stress pattern is generally due to an ending. The chart in (95) shows the most frequent endings in this group.

(95) **Frequent endings in Group II**

Ending		No. of words		Percentage (Total 151)	Example	Stem
ation	*ate+ion*	105	106	70	ac(còm.mo)(dá:.ti.o)nø	*accómodà:te*
	ation	1			e(lì.ci)(tá:.ti.o)nø	*elícit*
bility	*ible+ity*	9	23	15	ad(mìs.si)(bí.li.ty)	*admíssible*
	able+ity	13			ac(cèp.ta)(bí.li.ty)	*accéptable*
	uble+ity	1			dis(sò.lu)(bí.li.ty)	*dissóluble*

The most frequent ending—similarly to Group I—is *-ation* (106 words, 70 per cent). For these words F84's prediction is borne out: secondary stress is two syllables before *-ation* (e.g. *remù:nerá:tion*). However, the stems also have their stress two syllables away from *-ate,* as in *remú:nerà:te*. Prominence relations are reversed in the stem and the derived word: in *-ate* words the pattern is primary–secondary, in *-ation* words it is secondary–primary. In B94's system this naturally follows from the nature of the final foot: *-ate* constitutes a weak foot and thus gets secondary stress (i.e. (à:.te) = (HW)), while *-ation* forms a ternary foot, which is primary stressed (i.e. (á:.ti.o)nø = (σLσ)), cf. (96).

(96) ***-ate* words and *-ation* words compared** (B94: 181, 279)[36]

(96a) ac(cé.le)(rà:.te) = σ(σσ)(HW)

(96b) ac(cè.le)(rá:.ti.o)nϕ = σ(σσ)(HLL)

The pattern in (96a), which is preserved by (96b), is due to the violable Strong Retraction Condition (97), which says that before a weak foot (HW) a binary pattern is preferred.

(97) **Strong Retraction Condition (SR)**(B94: 166)

... (σ σ)(HW)#

ac(cé.le)(rà:.te) *(ác.ce.le)(rà:.te)

Another frequent ending is *-bility* (23 words, 15 per cent), derived from stems ending in *-Vble*. Generally, the endings *-Vble* are parsed as V)ble (B94: 203), leaving the final syllable unmetrified. This gives rise to stress on a preceding heavy syllable (e.g. *accéptable, avá:ilable, corrúptible*) or on a preceding H_n syllable which, as a foot-head, counts as heavy (e.g. *accéssable, defénsible*). If the preceding syllable is light, stress normally falls two syllables away as we saw in the *-bility* words of Group I (e.g. *prácticable, vúlnerable*). Occasionally, however, the whole ending *-Vble* is parsed into the last foot, i.e. stress falls on the syllable before the ending, even if it is light (B94: 203). Some of the stems of *-bility* words we are discussing are parsed like that (e.g. *illégible, dissóluble*). In all these *-Vble* stems stress is on the second syllable. The endings *-Vble* and *-Vbility* have the form given in (98a), so both endings have a rightmost foot-boundary before the *b*. This means that the sequence before the ending will keep its parsing and thus its foot-head, i.e. will be stress-preserving.

(98) ***-Vble* words and *-Vbility* words compared** (B94: 227, 230–234, 219)

(98a) V)ble

V(bí.li.ty)

(98b) ac(cép.ta)ble

(98c) ac(cèp.ta)(bí.li.ty)

Six words in Group II were regarded as Type 1 classical compounds. This low number is not surprising, because compound-initials normally form an exhaustive foot, i.e. the stress is on the first syllable, as in *anti-* = (an.ti). All the words in this group are formed by the compound-initial *elèctro:-* = e(lèc.tro:)| = LHH. A ternary foot here would be ill-formed: *(σHσ). Contrary to *anthro:po:-,* which is initially stressed and thus yields an ill-formed foot as discussed above, the parsing of *elèctro:-* is regular, and the unparsed syllable at the beginning is light. The parsing e(lèc.tro:)| does not conform to the generalisation that compound-initials are initially stressed, but otherwise it is well-formed (the foot (HH) is acceptable despite the non-initial H syllable). It is interesting to note that the stem *electr-* tends to be stressed on the second syllable, even if it produces a word-internal stress clash, as in *elèctrícity*. Another fact that is worth mentioning is

[36] For further details on why *-ation* is analysed this way see B94: 181.

that some of the Type 1 compounds we are discussing contain a Type 2 compound, which as a whole is a free form, as their second element, e.g. *elèctro:|cá:rdio:gràph.*

As for Type 2 compounds in Group II, they are a bit more frequent than Type I compounds here: I found 17 (e.g. *erỳthro:mý:cin*). The primary stressed feet are all well-formed and the compound-finals have a rightmost boundary after the null segment or final vowel, e.g. *-ology* = ology), as in e(pìs.te)(mó.lo.gy), *-ia* = i.a) as in en(cỳ:.clo)(pé:.di.a). Some words could also be analysed as Type 1 compounds with the compound-initial *laryngo-* and *seleno-,* as in la(rỳn.go:)(phán.to.mø) and se(lè:.no:)(grá..phi.cø), since *phantom* and *graphic* are free stems now. In this case the compound-initials would have a structure similar to *electro-* above. I put these words in the CC2 group because for example *graphic* is derived from *graph* by *-ic,* and though *graph* is a free stem in present-day English, its meaning is not what it means in classical compounds such as in *photograph* and *mimeograph.* Both analyses give the same result, but the Type 1 analysis is probably better because the vowel at the end of the compound-initial is long.

The initial unparsed syllable of Type 2 compounds here is generally a light syllable. One word (*encỳ:clopé:dia*) has a H_n syllable initially, which should count as light here. There are words with a H syllable at the beginning (*accèlerómeter, appèndicítis, ecclè:sióIogy*). The existence of these supports our assumption that #H(should be allowed, especially because heavy syllables are generated by the syllabifying algorithm, i.e. by splitting orthographical geminates, as in all these three examples. The pre-determined parsings for classical endings were again parsed with a final null element, as in *amànuénsis* = a(mà.nu)(én.si.sø). An exception is *-meter* in *accèlerómeter* = ac(cè.le)(ró.me.te)rø. However, there is a sonorant consonant at the end, which may be syllabic. On this issue see Section 6.3.4 below.

I regarded 7 words as monomorphemic, out of which 5 are proper names. All feet are metrically well-formed, since both (Hσ) and (Lσ) are well-formed. If we examine the weights of the first three syllables, we find that 3 words have a heavy second syllable (99). This means that pre-tonic secondary stress must fall on the second syllable because otherwise an ill-formed *(σHσ) foot would emerge. The word Mo(nòn.ga)(hé:.la) has a H_n second syllable, which may attract stress.

(99) **Monomorphemic words σ(Hσ)(σ́**

(99a) Ba(nà:.na)(rá:.ma)
(99b) Ec(clè:.si)(ás.ti.cu)sø
(99c) Ec(clè:.si)(ás.te:.sø)

The other three words (100) could in theory have either a ternary or a binary foot, since the middle syllable is light. It seems that whether the first syllable is light or heavy does not influence the pattern: both (HLσ) (= Pattern 1) (101a) and H(Lσ) (= Pattern 2) (101b) are possible. In some cases the pattern in (101b) is preserving the stress of a related item, e.g. *accèlerándo* may preserve the stress of *accèleráte,* and *impèdiménta* may preserve that of *impédiment.*

(100) **Monomorphemic words σ(Lσ)(σ́**

ac(cè.le)(rán.do)
im(pè.di)(mén.ta)
E(pà.mi)(nó:n.da)sø

(101) **The parsing of σLσ(σ́**

(101a) (mùl.li.ga)tá:wny = (H_nLσ) (Pattern 1)
(101b) ac(cè.le)rándo = H(Lσ) (Pattern 2)

The analysis of Group II words confirmed that Stress Preservation is a decisive factor in secondary stress placement, shown by words ending in *-ation* and *-bility.* Furthermore, our suggestion that initial heavy syllables are not necessarily stressed has been illustrated by several examples. The supposition that in the configuration #HLσ it is always the heavy syllable that is stressed was not confirmed, e.g. *accèlerómeter.* It seems instead that some items preserve the stress of items that are not true stems for them (cf. *accèlerómeter* and *accéleràte*). The chart in (102) shows that 35 per cent had a H medial syllable, which cannot be accommodated in a ternary foot *(σHσ). 21 percent could give rise to the dispreferred foot (σH_nσ), while 44 per cent had a light medial, which is ideal for a ternary foot. However, due to Stress Preservation, the parsing σ(Lσ) emerges instead of (σLσ). As for the binary feet in this group, 56 percent of them will be the ideal (Hσ), as H_n syllables count as heavy in foot-initial position.

(102) **Syllable types before the primary stress—reasons for a binary pattern**

	No. of occurrence		Percentage
LHL	22		
LHH	8		
H_nHL	14	75	35
H_nHH_n	1		
HHL	30		
LH_nL	17		
LH_nH	4		
H_nH_nL	7	46	21
HH_nL	17		
HH_nH_n	1		
LLL	43		
H_nLL	20	97	44
HLL	33		
HLH_n	1		
Total		218	100

The Type 1 compounds of this group had a compound-initial stressed on the second rather than on the first syllable (*elèctro:-*). This compound-initial does not have an exhaustive foot, but otherwise behaves like other Type 1 compound-initials.

6.3.3 Group III—Pattern 3: #σ̀σ̀σσ́

Group III is a heterogeneous one: it contains words that have a variant with adjacent initial stresses, and may have one or two other variants as well (see Appendix 3). Initial adjacent stresses are analysed as (ϕ.H)(σ̀... by B94 (cf. Section 4.3 above). These examples are given as having a secondary stressed initial syllable followed by a tertiary stressed one in Wells.

As in theory tertiary stressed syllables may either be subsumed under secondary or be regarded as unstressed syllables with a full vowel, there are two possible analyses one can give to a word like *dèrègulátion* /ˌdiːˌregjəˈleɪʃᵊn/ (103).

(103) *dèrègulátion*

(103a) (ϕ.dè)(rè.gu)(látion

(103b) (dè.re.gu)(látion

(103a) shows preservation of the stem stress in *règulátion*, while (103b) does not. However, (ϕ.H) is an exceptional foot in that it is right-headed, since the null segment does not have phonetic content and is incapable of being stressed. Furthermore, it contains a syllable that is made up of a single null element. This exceptionality (i.e. right-headedness) indicates that the foot (ϕ.H) should be avoided. In words like *dèrègulátion* the analysis given in (103b) is not problematic. In words like *ìmprègnabílity* = im.preg.na.bi.li.ty, however, the second syllable is heavy, which would cause a violation of Metrical Well-formedness if a ternary foot were constructed, i.e. *(ìm.preg.na)bílity. Therefore words with a H second syllable cannot be given this type of analysis, only the one with a right-headed foot.

There is another difference between (103a) and (103b). (103a) does not show the difference between prominence, while (103b) explicitly predicts that phonetically the first syllable is more strongly stressed than the second one (in Wells it has the pattern secondary–tertiary).[37] Following B94 I have disregarded this phonetic difference and accepted the parsing (ϕ.H)(σ̀, i.e. (103a). This analysis is chosen for Pattern 3 because this can account for examples with a H second syllable and shows preservation of the stem stress on the second syllable (e.g. *ùnè:conómic* preserves the stress of *è:conómic,* and *é:* yields a heavy syllable, which cannot appear foot-medially).

Let us examine the syllables at the beginning of Group III words. The (ϕ.H)(σ̀ analysis predicts that if there are initial adjacent stresses in the word, the first overt syllable must be heavy, because a *(ϕ.L) foot is ill-formed, being too light (B94: 155). This prediction is borne out: no light syllable is secondary stressed initially. The heaviness of the first syllable may be due to a

[37] This phenomenon is noted by Selkirk (1984: 67) as well.

long vowel (e.g. *àchòndroplásia* /ˌeɪ̥kɒndrəʊˈpleɪziə/). If the word in question has a variant that is not stressed on the initial syllable (i.e. follows Pattern 2), the vowel of the first syllable is generally short (e.g. *achòndroplásia* /əˌkɒndrəʊˈpleɪziə/), which yields the footing #L(σ̀. This shortening, however, does not always occur, as in *trinitrotoluene* = (ϕ.trì:)(nì:.tro:)(tó.lu)(è:.ne) ~ tri:(nì:.tro:)(tó.lu)(è:.ne). In the second variant of this word a heavy syllable must be left unparsed at the beginning. This shows again that the parsing #H(should be acceptable, contrary to what B94 (p. 155) suggests. A full list is given in (104) of those Group III words that have a variant following Pattern 2 where the initial syllable with a long vowel is unstressed.

(104) **Group III words with an unstressed long vowel in the initial syllable (16 items)**

de:fìbrilá:tion	*de:pòpulá:tion*	*de:règulá:tion*$_{Am}$	*de:sàliná:tion*$_{Am}$
de:sègregá:tion$_{Am}$	*de:tò:xicá:tion*$_{Am}$	*do:dècasýllable*$_{Am}$	*co:hàbitá:tion*
co:hàbité:e	*pre:dèstiná:tion*	*pre:fàbricá:tion*	*pre:mèditá:tion*
re:dècorá:tion	*re:fòrestá:tion*	*tri:nì:tro:tóluè:ne*	*i:dè:alizá:tion*

The first syllable may also be heavy due to a consonant after the vowel, i.e. if it is closed (e.g. *dìssàtisfáction*). If the first syllable is closed—with three exceptions (*af-, ex-, trans-*)—it is closed by a sonorant or *s* (*con-, dis-, il-, in-, im-, ir-, un-*), i.e. it is an H_n syllable. As an H_n syllable counts as L in unstressed position, these words can in theory have variants following Pattern 2, e.g. *dissàtisfáction* = dis(sàt.is)fáction. In these words the constraint *#H(is not violated, because #H_n(equals #L(. As for *af-, ex-* and *trans-,* they have to be left unparsed in initial position (a full list of these is *affòrestá:tion, extèmporáneous, translìterátion, transfigurátion*) though this may be dispreferred.

As regards the second syllable, which is a foot-head in words following Pattern 3, it may be H, H_n or L, because all are allowed foot-initially: the second syllable is H in *mìsàpprehénsion* = (ϕ.mìs)(àp.pre)(hén.si.o)nø, it is H_n in words like *nònìntervéntion* = (ϕ.nòn)(ìn.ter)(vén.ti.o)nø, and it is L in *prèmèdicátion* = (ϕ.prè:)(mè.di)(cá:.ti.o)nø). B94's foot-typology predicts that if the second syllable is H_n or L, the word may also have a variant with secondary stress on the first but not on the second syllable (i.e. following Pattern 1 and 3)(e.g. *dissimilation* = (ϕ.dìs)(sì.mi)(lá:.ti.o)nø ~ (dìs.si.mi)(lá:.ti.o)nø). If the second syllable is H, this option is not open, because foot-medially H syllables cannot appear. This prediction is borne out: no #σHσ... word has a Pattern 1 variant in Group III (cf. Appendix 3, Group III/c).

If we examine the first two syllables together, we find that if the first syllable is H_n or alternates between a H and a L syllable (alternating between a long and a short vowel in the first syllable), and the second syllable is L or H_n, the word may have three alternants: one following Pattern 3, e.g. (ϕ.ìl)(lò.gi)(cá.li.ty), another following Pattern 2, e.g. il(lò.gi)(cá.li.ty), and a third one with Pattern 1, e.g. (ìl.lo.gi)(cá.li.ty).

The data show the alternations predicted above. As a result, Group III had to be split up into three smaller sets, based on the patterns the variants follow, as shown in (105). The last column shows the number of items in the subgroup.

(105) **Patterns followed by Group III words**

Group	Patterns		Examples			No.
			#σ̀σ̀σσ́	**#σσ̀σσ́**	**#σ̀σσσ́**	
III/a	3	#σ̀σ̀σσ́	*àprìorístic*	—	—	24
III/b	3~2	#σ̀σ̀σσ́ ~ #σσ̀σσ́	*àchòndroplásia*	*achòndroplásia*	—	73
III/c	3~2~1	#σ̀σ̀σσ́ ~ #σσ̀σσ́ ~ #σ̀σσσ́	*dìssàtisfáction*	*dissàtisfáction*	*dìssatisfáction*	5
Total						102

Words in Group III/a have only one pronunciation, following Pattern 3. Group III/b, the largest one, contains words in which the second syllable is always stressed, while stress on the first one is optional (Pattern 3~2), which may reflect that (ϕ.H) is an exceptional foot. In Group III/c we only find 5 words. These have three variants (Pattern 3~2~1).

The items in Groups III/a–b are stress-preserving. The case of the 5 items in Group III/c is more complicated (*dissatisfaction, dissimilarity, dissimilation, illogicality, idealization*). All the stems have the main stress on the second syllable, which is preserved in cases (106a–b). In (106c), however, this stem stress is not preserved.

(106) **Group III/c**: *dissatisfaction: dissátisfy/sàtisfáction*

(106a) (ϕ.dìs)(sà.tis)(fáction

(106b) dis(sà.tis)(fáction

(106c) (dìs.sa.tis)(fáction

It might be the case that (106c) preserves the initial stress of (106a), rather than the main one. Since primary stress is more prominent than secondary, it is quite strange to find cases that fail to preserve the primary stress in favour of the initial secondary one. What is more, in some words (e.g. *dìssimilárity*) this version is the most frequent one. A reason might be that in four of the five examples (and also in the most frequent pronunciations of *idealization*) the second syllable is L, while the first is H_n or H, which might attract the stress. Another reason for this behaviour may be that the first syllable is stressed contrastively (as in the sentence "*I mean dissatisfaction, not satisfaction".*), which may be a valid reason for four of the words due to the negative prefix in the initial syllable.

Several of Group III words contain an autostressed prefix (e.g. *mìsàpprehénd*) (107). These prefixes (namely *a-, an-, mal-, mis, re-*) are analysed as a separate foot in 5.1.1.2 above.

(107) **Autostressed prefix**

mis- = (ϕ.mis)

mìsàpprehénd = (ϕ.mìs)(àp.pre)hénd

For some autostressed prefixes this analysis proves to be correct: words with these mostly appear in Group III/a (a full list of 11 items is in (108)), which automatically follows from their pre-determined structure (ϕ.H). Similarly, all words with the prefixes *non-* and *self-* belong to Group III/a. These very productive prefixes are also autostressed, though not mentioned in F84.

(108) **Group III words that are always stressed on an autostressed prefix (10 items)**

mìsàpprehénd	*mìsàpprehénsion*	*mìscàlculá:tion*	*nònàlcohólic*	*nònìnterfé:rance*
nònìntervéntion	*rè:dìstribú:tion*	*rè:èducá:tion*	*sèlfàbnegá:tion*	*sèlfprèservá:tion*

The exceptions, i.e. variants that have an autostressed prefix but which are not stressed on the prefix according to Wells, actually outnumber regular cases, and are given in (109).

(109) **Group III words that lack stress on an autostressed prefix (11 items)**

achòndro:plá:sia	*achòndro:plástic*	*misrèpresént*	*re:dècorá:tion*
redù:plicá:tion	*re:fòrestá:tion*	*regènerá:tion*	*regù:rgitá:tion*
rejù:vená:tion	*rejù:venéscence*	*resùscitá:tion*	

I do not consider this lack of stress as a strong argument against the proposed pre-determined parsing of autostressed prefixes. Firstly, all words with autostressed prefixes belong to Group III, i.e. have a variant where the prefix and the first stem vowel are both stressed. Secondly, the *re-* items given in (109) may have pronunciations analogical to (i.e. metrically consistent with) another prefix *re-,* which is pronounced short. This means that Suffix Consistency (i.e. faithfulness to the pre-determined parsing) is violated (which is a possible violation) in favour of some other constraint. F84 (pp. 184–185) says that the form *re-* corresponds to two distinct prefixes, and only one of these is autostressed (with the meaning 'again'), as in *rè:fòrestá:tion.* The other *re-* is stress-repellent, and as such may be unstressed, and its meaning is not stable, as in *rebúke, repórt, rècolléct.* This analogical pronunciation may appear especially in those words that are not used frequently or their internal structure is not transparent to an everyday speaker, e.g. *resùscitá:tion* (coming form the Latin *resuscitatus* = reawaken (OED)). The third and most important reason for not treating these counterexamples as sufficient evidence against the pre-determined parsing of autostressed prefixes is that the great majority of words with these prefixes do have stress on the prefix—but these items are not primary stressed on their fourth syllable (e.g. *àssymmétrical, màlfórmed, mistrúst, rèpláy*), and therefore are missing from the corpus. Furthermore, words with *non-* and *self-* are not listed in dictionaries because these are very productive. The existence of words like (109) indicate that the analysis of autostressed prefixes needs further research.

Another large proportion of Group III words have dependent prefixes, with a pre-determined syllable-structure (e.g. *de-* = de. *dèrègulátion* ~ *derègulátion*)(cf. 5.1.1.1 above). It is interesting to note that in Group III we both find words with *un-* and *in-,* i.e. they behave in a similar manner, which might justify F84's claim that these prefixes both belong to the Dependent group.

Out of the 102 words only 1 is monomorphemic, *Rhò:sllànerchrú:gog* (parsed as (ø.Rhò:s)(llà.ner)(chrú:.go)gø), with the first three syllables HLH_n.

Group III words showed that B94's claim that a degenerate foot is always headed by a H or H_n syllable is true: no item appeared with initial secondary stress on a light syllable. Furthermore, B94's foot typology proved to be correct, confirmed by the possible variation among these items (i.e. for example if the weight of the first three syllables is HLσ, HH_nσ, H_nLσ or H_nH_nσ all three patterns may be followed, though this is only a possibility).

6.3.4 Group IV—Patterns 1~2: #σ̀σσσ́ ~ #σσ̀σσ́

The fourth pattern is the rarest, only 53 words follow it (see Appendix 4). In Group IV words, primary stress is on the fourth syllable, while pre-tonic secondary stress can appear either on the first, or on the second syllable. According to the predictions of foot typology (8), this is only possible if the second syllable of the word is light or H_n, because *(σHσ) is ill-formed. If it is L or H_n, we can expect variation between σ(Lσ) and (σLσ). Due to a change in vowel length, it is also possible that in different variants of the same word the weights of the first two syllables differ. The stress may fall on the first syllable, followed by a short second vowel, while it may fall on the long second vowel in another variant (e.g. (Lò:u.i.si)(á.na) ~ Lou(ì:.si)(á.na)).

While the great majority of variants have well-formed feet (i.e. conform to the foot types just described or display variation in a similar manner to *Loui:siana*), there are some variants that have a heavy second syllable even if the stress is on the first syllable. This gives rise to an ill-formed foot *(σHσ) (110).

(110) **Ill-formed feet**

(110a)	LHL	*(à.rith.me)tícian
(110b)	~ LHH	*(mò.no:.the)í:stic ~ *(mò.no:)(thè:)í:stic
(110c)	HHL	*(È:.gyp.to)lógical
(110d)		*(ì:.co:.no)gráphic$_{Am}$
(110e)		*(tràns.fe:.ra)bílity
(110f)	H_nHL	*(ìn.a:u.gu)rá:tion
(110g)		*(hìs.to:.ri)ógrapher
(110h)		*(Àn.to:.ni)ó:ni

(110a–h) all contain a ternary foot with a H medial syllable, which is ill-formed. The solution we can provide for these is having an unmetrified syllable word-internally, just like with *chàracterístic* discussed above. As a result, these items will have a binary foot and an unmetrified syllable before the next foot, e.g. *àrithmetícian* = (à.rith)me(tí.ci.a)nø = (LH)L(σLσ)W. In (110b) the second variant has adjacent stresses inside the word. According to B94 (p. 64), this is the case when a null segment may be inserted word-internally, as in *depàrtméntal* = de(pàr.tø)(mén.ta)lø, i.e. a word-medial (HW) foot is created. This analysis gives (mò.no:)(thè:.ø)(ís.ti.cø). Another possible solution is to say that *mòno:thè:ístic* is a Type 1 compound (due to the existence of *theistic* as a free stem). In this case the word is parsed as (mò.no:)|(ø.thè:)(ís.ti.cø) if we apply our pre-determined parsing to *mono-*. In this case the null vowel inserted in the middle will not be irregular, due to the existence of adjacent initial stresses at the beginning of a domain.

Out of the 53 words 20 can be regarded as a classical compound. As Type 1 compounds (which have a free stem as their second element) are generally stressed on their initial syllable (recall that CCI1 is a foot on its own, as in *ànticlérical* = (àn.ti)|(clé.ri.ca)lϕ), we expect that all these words will be Type 2 compounds (with bound finals), because only those should display variation of initial secondary stress. This prediction is borne out: only 3 words are regarded as Type 1 compounds: *mono:theístic, pi:e:zo:chémistry, pi:e:zo:eléctric.* The pre-determined parsings of compound-initials are: *mono-* = (mo.no)|, *piezo-* = (pi.e.zo)| ~ pi(e.zo)|. It is unusual for a Type 1 compound-initial to have two pre-determined parsings. The fact that *piezo-* displays this behaviour may reflect that this compound-initial is on its way between Type 2 and Type 1 compound-initials. As for *mono-,* three of the four variants of *monotheistic* can be accounted for if we take the parsing (mo.no)|. There is one variant which is stressed on its second syllable, mo(nò.the)(ís.ti.cø). Maybe this variant also behaves like a Type 2 compound.

17 words in Group IV are Type 2 compounds. The classical suffixes of these words have a right foot-boundary after the final null segment in their pre-determined parsing, e.g. *-theosis* = the.o.si.sϕ) as in *apotheosis* = (à.po.the)(ó.si.sϕ) ~ a(pò.the)(ó.si.sϕ). In theory, the final foot can either be binary (if the final weak syllable is preceded by a H syllable), but all variants have a rightmost ternary foot due to the light syllable before the final W one. There is one apparent exception, *-grapher,* which is parsed as gra.phe)rø as in his(tò.ri)(ó.gra.phe)rø. The word ends in the sequence *-er,* which may be pronounced with a schwa /ə/$_{Br}$ /ər/$_{Am}$ or as a syllabic consonant in American.

The metrification of syllables headed by a syllabic consonant deserves a note here, because it is sometimes a problem in the metrification of Type 2 compound-finals. B94 (pp. 69, 256–257) says that these syllables are "less weak" than a ø, i.e. more like a light syllable, when trying to account for (ìn.ter)(cép.tø) ~ (ìn.ter)(cép.tor)[38]. Words ending in a syllabic sonorant behave in two ways: compare examples in (111a) and (111b), where in the two columns the ending *-ure* behaves in different ways. In column (111a) words have a weak final foot (HW),

[38] As usual, B94 does not give syllable boundaries, which causes ambiguity here. Cf. table (112) below.

because post-tonic secondary stress emerges. In (111b), however, the same syllable is primary stressed, which means the final foot is non-weak. It seems B94 attributes this fact to the dual behaviour of *-u-*. In the first column it counts as weak, while in the second column it counts as light, and a (HL) foot gets primary stress. I think the reason for this should be that a syllabic consonant freely alternates with a ə + consonant sequence. B94 does not think that a syllable headed by a /ə/ should be W in general, though it is possible, while a syllabic nucleus does make the syllable weak (B94: 17). My analysis for these items would be different: I would say *-ure* = WW and in the first column it is parsed as W)W, while in the second column a (HWW) final foot emerges. For a detailed account of the possibility of this analysis see the analysis of *-átory* words in Section 10.3.

(111) **Final syllables with sonorant nuclei** (based on B94 (pp. 68–69, 256–257))

(111a) final weak foot (HW)	(111b) final strong foot (HL)
árchi(tèc.tu)re	mànu(fác.tu)re
législàture	
nómenclàture	

Another problem with syllabic consonants must be mentioned. B94 parses these kind of syllables in more than one way, sometimes contradicting his own principles (e.g. (árchi)(tècture) has a word-final ternary foot with secondary stress, though in this position ternary feet are always primary stressed). In the chart (112) the examples are copied from B94. Burzio usually does not explicitly mark word-final empty nuclei, and thus sometimes incorporates a final consonant into the foot. It is not clear whether he means -rø or not, because in general all word-final orthographic consonants are followed by ø. In the first column the parsings after the equation sign (=) do not explicitly appear in the book but it is evident from the text that these parsings are the correct ones, the first version (e.g. (ìnter)(céptor)) is just a shorthand for the second one (ìnter)(céptorϕ)). Another interesting inconsistency is that while ac(cèle)(rá:.ti.o)n has a ternary final foot, in organi(zá:tiona)l *-tio-* must constitute only one syllable, since a foot can be maximally ternary.

(112) **The parsing of final syllables with sonorant nuclei** (B94 (pp. 16, 62, 68–69, 130, 141–143, 159–160, 181–182, 255–259))

(112a) **Consonant included**	(112b) **Consonant excluded**	(112c) **No explicit parsing**
(ìnter)(céptor) = (ìnter)(céptorϕ)	e(xécuto)r	
(táller) = (tállerϕ)	?(èxhi)(bítion)er	commoner, happier
(árchi)(tècture)	(márylan)der	músculature
(álli)(gàtor)	new(énglan)der ~ new(énglande)r	hélicòpter
(ági)(tàtor)	(nátu)re	admínister
	(sígnatu)re	àlexánder, còriánder, òleánder, zòroáster
(wóoden) = (wóodenϕ)	a(mérica)n, bost(ó:nia)n	
(fréshen) = (fréshenϕ)	hèrcu(lé:a)n, elìza(bé:tha)n	archimédean
	ac(cèle)(rá:.ti.o)n	
(dìscipli)(nárian)	he(rèdi)(tária)n	
(púmper)(nìckel)	àdjec(tí:va)l, dìsci(plí:na)l	
	organi(zá:tiona)l	

This digression served to show that the parsing of syllabic consonants is not a well-developed part in B94. I followed orthography in my analysis, i.e. I parse syllabic consonants with a following empty segment, i.e. *meter* = me.te.rø, because if the final syllable appears with a schwa rather than a syllabic consonant, this parsing is correct, and there is free variation between the two pronunciations.

Let us get back to Group IV words. Stress preservation, which up to this point proved to be the main factor in deciding the place of the secondary stress, is often violated by the items in this group. If the stem has two stress patterns (#σ́σ ~ #σσ́), both derived words can be regarded as preserving. In some cases the stem follows the pattern exemplified by (113), when again both derived variants are preserving.

(113) *extravasate*

(113a) ex(trá.va)(sà:te #σσ́

(113b) (ϕ.èx)(trá.va)(sà:te #σ̀σ́

The variants that preserve the stem pattern are in italics in Appendix 4. Altogether 7 of the 25 derived words could be regarded as totally preserving, i.e. the stems of these had variants #σ́σ ~ #σσ́. However, in the other 18 cases there is only one stem pattern attested and one of the derived patterns is non-preserving. Generally this non-preserving variant follows Pattern 1 (in 17 cases), i.e. #σ̀σσσ́, like *àmbassadó:rial,* which is due to the light or H_n syllable in second position, whose parsing as (σLσ) is preferred to (Lσ). In the 8 underived words Stress Preservation cannot work. It seems that the choice is arbitrary between the two possible pronunciations.

The analysis of Group IV words showed that Stress Preservation is sometimes overridden, and a ternary foot is built over a sequence of σLσ syllables. The existence of these forms supports B94's assumption that (σLσ) is preferred to σ(Lσ), though it must be noted that generally Stress Preservation is stronger (cf. the 151 suffixed items in Group 2 and the 25 suffixed items here).

6.3.5 Group V: other patterns

Appendix 5 shows the 35 words that have at least one variant with primary stress on the fourth syllable, but its other variants have their primary stress somewhere else.. For example *annunciatory* has the following variants: *annúnciatory ~ annùnciá:tory ~ annúnciatò:ry*. Out of these only the middle one has primary stress on the fourth syllable, following Pattern 2, i.e. only one variant (which is put between angled brackets in Appendix 5) is relevant to our analysis here. The table in (114) shows the distribution of Group V words.

(114) **The distribution of Group V words**

Pattern	Suffixed / prefixed		CC1		CC2		Mono-morph.		Total		Percentage
1	6	14	5	6	1	2	8	13	20	**35**	5
2	4		—		1		2		7		
3	—		1		—		—		1		
1~2	3		—		—		3		6		
3~2	1		—		—		—		1		

Some Group V words end in *-atory*, which are analysed in Section 10 below. A major problem with Group V words is that in some cases primary and secondary stress are interchanged (115).

(115) **Place of primary and secondary stress interchanged**

(115a) *jústificà:tory ~ jùstificá:tory*

(115b) *flíbbertigìbbet ~ flìbbertigíbbet*

This is problematic, because according to B94 (p. 16) the primary stress will always fall on the last non-weak (i.e. not (HW)) foot. Therefore, post-tonic secondary stresses always arise if the final foot is (HW). If we maintain this assumption, the words in (115) with secondary–primary pattern will have to have a ternary foot word-finally. A ternary foot attracts primary rather than secondary stress, being a non-weak foot. The analyses are given in (116).

(116) **Word-final binary–ternary alternation**

(116a) (jús.ti.fi)(cà:.to)ry ~ (jùs.ti.fi)(cá:.to.ry)

(116b) (flíb.ber.ti)(gìb.be)tø ~ (flìb.ber.ti)(gíb.be.tø)

These words can only have a final ternary foot, if the last weak syllable is metrified. B94 (p. 166) says that it is only verbs that tend to parse the final null vowel. We have suggested (following B94) in Section 5.2.2.2 that Type 2 compound-finals should also parse the final null vowel. In general, this option is not open for other classes, which could suggest that when (116b) is used as a verb the second pronunciation should be preferred, and when it is nominal, the first one. However, there seems to be no difference like that: the same string will have two different parsings.

6.3.6 British versus American

No major differences have been found between the American and British patterns. Regular sound equivalencies are marked in the Appendices by a tilde. These include the following features of American English: (i) lack of breaking (ii) ɑː instead of ɒ (iii) *-ization* is pronounced with /ɪ/ rather than /aɪ/ (iv) əʊ is often ɔ at the end of prefixes like *auto-*. One important difference between the two dialects is that words ending in *-ary/-ory* have secondary stress on the suffix in American English (for details see Wenszky: 1996).

6.4 Summary

This chapter discussed the results of the analysis of 737 words primary stressed on their fourth syllable. The main aim of the investigation was to test the hypotheses of Chapters 4 and 5. Additionally, the validity of B94's foot typology was also tested. My findings can be summarised as follows (117). Each point is discussed in detail below.

(117) **The major findings of this chapter**

(a) Stress Preservation is responsible for the place of pre-tonic secondary stresses in the overwhelming majority of derived words

(b) initial H syllables do not always attract stress: the constraint *#H(should be loosened: this pattern does exist, though it may be marked

(c) if Stress Preservation cannot apply and Metrical Well-formedness allows more than one pattern, the choice is rather arbitrary

(d) B94's foot typology proved to be correct in general

(e) the pre-determined parsings for prefixes and compound-initials suggested in Chapter 5 proved to be correct in general

The analysis of words proved that Stress Preservation is the main factor in deciding the place of pre-tonic secondary stress in derived items. The feet in the words conformed to B94's foot typology, with occasional violations, i.e. *(σHσ) feet in words like *chàracterístic*. Examples like these have been analysed with a word-internal unparsed syllable, i.e. (chà.rac)te(rís.ti.cø) as proposed in B94. Stress Preservation was sometimes overridden by the preference of the ternary foot (σLσ) over the parsing σ(Lσ), but this only occurred in 17 words compared to the almost 300 suffixed words of Group I and Group II, in which stress preservation was not violated.

The analysis of monomorphemic items did not confirm the hypothesis that initial H syllables attract stress, the choice between the metrically well-formed parsings seemed to be rather arbitrary. However, in a sequence #σHσ it is generally the heavy syllable that is stressed, due to the non-existence of (σHσ) feet. I proposed that B94's constraint against initial unstressed H syllables should be loosened, as this was found to be a relatively frequent phenomenon, as in ad(jù:.di)(cá:.ti.o)nø. Therefore it seems that in a sequence #HLσ both #(HLσ) and #H(Lσ) are possible, while #σHσ will always be parsed as σ(Hσ). Furthermore, H syllables were found to be rather frequent foot-finally, both in binary and ternary feet, as in the compound-initial (à:u.to:)| = HH, or in (tè:r.gi.ve:r)(sá:.ti.o)nø = (HLH).

The set of words I analysed contained autostressed prefixes only rarely, i.e. the structure proposed for them could not be tested. The analysis of Type 1 compounds confirmed my hypothesis that Type 1 compound-initials form a foot and a domain on their own. Due to this pre-determined parsing words like *à:uto:segméntal* = (à:u.to:)|seg(mén.ta)lø are regular in my analysis, while B94 has to treat them as exceptional. Type 2 compounds were generally suffixed, i.e. the pre-determined parsing proposed for them could not be tested either. Several of these words end in a Latin/Greek suffix, e.g. *-itis*, most of which were analysed as a sequence that parses the final null element as in *pèrito:ní:tis* = (pè.ri.to:)(ní:.ti.sø), *appèndicí:tis* = ap(pèn.di)(cí:.ti.sø). The most frequent of these suffixes is *-ia* as in (phàn.tas.ma)(gó:.ri.a). The parsing of Latin/Greek suffixes as σø) proved to be correct.

PART III:
POST-TONIC SECONDARY STRESSES

7. INTRODUCTION TO PART III

This part of the dissertation examines some cases of post-tonic secondary stress. Due to the relative shortness of English monomorphemic words, post-tonic secondary stress—similarly to pre-tonic secondary stress—mainly occurs in affixed words. Suffixed words often have post-tonic secondary stress, usually on the suffix itself, e.g. *própagàte*.

Post-tonic secondary stress normally appears in words that have the main stress on the third syllable from the end or earlier. If the word is oxytonic e.g. *kàngaróo*, there is evidently no place for another stress after the tonic syllable. If the primary stress is on the penult, as in *allérgic*, a secondary stress on the final syllable would cause a stress clash, which is generally avoided, though Wells gives words such as *séxìsm* with a post-tonic tertiary stress, which is subsumed under secondary in this analysis. When the primary stress is on the third syllable from the end, as in *épigràph,* the final syllable can be secondary stressed. If the main stress is even earlier, it is even more likely to have post-tonic secondary stress, because lapses are dispreferred in English. Primary stress on such an early syllable usually occurs if there is a stress-neutral ending attached to an already suffixed word, as in *dédicàted*.

One more case must be mentioned: adjacent stresses may occur word-initially. As a result, if the primary stress is on the first syllable of a disyllabic word, there might be cases where the final (in this case the second) syllable is secondary stressed (e.g. *chlóride*). This pattern is problematic for B94 and will be discussed in Section 8.3 below.

Before the brief discussion of how different theories handle post-tonic secondary stress, it must be noted that there is no generally accepted method for deciding which syllables bear post-tonic secondary stress. Dictionaries and theoreticians give considerably different sets of words that have post-tonic secondary stress. For example, the word *gýmnast* has no secondary stress according to Burzio (1994)(B94), while Halle—Vergnaud (1987)(HV) give it with one. Similar differences can be observed in dictionaries. Wells does not mark post-tonic secondary stresses (except for *-ism* words such as *térrorìsm* and in compounds whose second element is at least disyllabic, e.g. *cárpet-swèeper*), while the American Heritage Dictionary (1994), for example, gives several words with post-tonic secondary stress, e.g. *gýmnàst.* Dictionaries are compared from this respect in Section 8.3 below.

This part is arranged as follows. Chapter 8 briefly discusses the analyses previous theories provided to post-tonic secondary stress. B94's account is presented in a bit more detail, and Section 8.3 elaborates on the problem of disyllabic words with two stresses, which are problematic for B94. Chapter 9 is dedicated to the ending *-ative*, which has two pronunciations /ətɪv/ and /eɪtɪv/. The chapter examines what influences the choice between the two pronunciations. The ending *-atory* is discussed in Chapter 10, which again has more than one pronunciation: /eɪtəri/, /ətəri/ and /əˌtɔːri/. In both Chapter 9 and 10 analyses given by previous accounts are presented and B94's methods are applied to a collection a words from Wells.

8. THE BACKGROUND

8.1 Rule-based accounts

As we have seen in the Literature review (Chapter 2), post-tonic secondary stress poses some problems to researchers. Out of the six theories examined, only three were capable of deriving these secondary stresses without major problems (Halle—Vergnaud (1987), Burzio (1994), Halle (1998)), while the other three accounts (Liberman—Prince (1977), Selkirk (1984) and Fudge (1984)) could not satisfactorily derive the sample words with post-tonic stresses. Below the findings of the Literature review are summarised briefly.

In Liberman—Prince (1977)(LP) the primary stressed syllable can only be followed by a strong node if the rule of Foot Formation applies. This means that the configuration *www* should appear after the primary stressed syllable, because this is the string that Foot Formation applies to and turns it into *wsw* (1), assigning the medial syllable secondary stress.

(1) **Foot Formation (FF)** (LP: 296)

N N

s_1 ⇒ s_2 w

s_2

w w w w s w

σ_1 σ_2 σ_3 σ_1 $\grave{\sigma}_2$ σ_3

This solution is only open to a limited set of words, because three *weak* syllables at the end of the word can only occur if the final syllable is extrametrical (thus *weak*); the penultimate syllable is [+stress] but also *weak,* since when it is incorporated into the tree it is the last syllable of the word; and the antepenultimate syllable is [-stress], thus *weak* or it is skipped because of Retraction and the syllable was not [+stress] in any previous cycle. These complex criteria are fulfilled by few words, e.g. by some *-ative* words as Nanni (1977) points out (cf. Section 9.1 below), which illustrate this process in (2). Therefore, many cases of post-tonic secondary stresses cannot be handled by this mechanism.

(2) **Post-tonic secondary stress in LP** (based on LP and Nanni (1977: 759–760))

législàtive

(2a)			(2b)	
le gis la: tive		⇒	le gis la: tive	
- - +	Deforestation		+ - + -	SSA
+ - + (-)	ESR, Strong Retraction		s w w w	
s w w	LCPR		s	LCPR
s			s	

(2c)

le gis la: tive
\+ - + -
s w s w FF
s w

Selkirk (1984)(S84) points out this deficiency of LP's system (S84: 171–172), but her own theory is not without difficulties in this respect either. The central problem is that primary stress is generally realised on a syllable near the right edge of the word, and so the MSR places the primary stress on the rightmost strong syllable. Such a syllable can only escape promotion to the third metrical level (i.e. getting primary stress) if it is extrametrical when the MSR is applied. This, however, is not so in all cases of post-tonic secondary stress, especially with multiply affixed items, because maximum one affix can be extrametrical. This is illustrated by words like *émanàtory,* in which it is only the ending *-ory* that can be extrametrical and thus *-at-,* which has a second level beat from the previous cycle (*emanàte*), will get the primary stress.

Fudge (1984)(F84), though gives several words with post-tonic secondary stress (e.g. *acétylène, ínfantìle, extrémìst*) does not have explicit means to derive post-tonic secondary stresses. Some endings are listed with the remark "always pronounced with a full vowel" (e.g. F84: 60, *-ate*), and the example words in these groups bear post-tonic secondary stress on the ending, e.g. *órientàte.* Other endings have their pronunciation recorded with a secondary stress mark (e.g. *-ine* [-ˌaɪn]*,* F84:77), as in *èlephántìne.* Other endings, such as *-ile* in *dómicìle* (F84: 76–77), which seem to belong to the same group (i.e. all examples are given with secondary stress on the suffix) are not explicitly declared to bear secondary stress. There is one exception though, classical compounds with a compound-final composed of a weak foot, where post-tonic secondary stress is on the compound-final (F84: 141)(e.g. *cátalògue, cátaplàsm*).

All post-tonic secondary stresses are actually derived from primary stresses in Halle—Vergnaud (1987)(HV). The Main Stress Rule marks the rightmost strong syllable as the primary stressed one. Secondary stresses are generated by the Alternator, which incorporates extrametrical material into the grid and forms binary feet from right to left. It is possible that the Alternator builds a foot after the tonic syllable with its head right after the primary stress, but it will not surface as secondary stress, because the asterisk in question will be deleted by Stress Deletion, to avoid clashes. It is not possible for the Alternator to create a foot-head two syllables after the primary stress because there can be maximally two syllables: the last one should be extrametrical (i.e. invisible to the MSR) and the penultimate one must be headed by a short vowel in order to be able to avoid the Accent Rule (which assigns a line 1 grid mark to syllables with a branching rime) and thus avoid primary stress. Extrametricality applies to the last syllable

of nouns and suffixed words, i.e. maximally one syllable may be invisible to stress rules.[39] This process is illustrated in (3).

(3) **The work of the Alternator after the tonic syllable** (based on HV)

					Non-cyclic		*					*		
		*			MSR	(.	*)			Stress	(.	*)		
MSR	(.	*)				(*	*)	*		Deletion	(.	*)	.	
	*	(*	*)	.	Alt.	(*)	(*)	(*	*)	1st, 3rd σ	*	(*)	*	*
→	mo	no	po	<ly>	→	mo	no	po	ly		mo	no	po	ly

There is one more method to create secondary stresses. The Rhythm Rule in the non-cyclic stratum retracts the primary stress located on the last syllable of the word to the left onto the nearest strong syllable. This move results in post-tonic secondary stress on the syllable that was originally primary stressed (see (4) for an example, which is discussed in detail in Section 2.5 above). This method generally gives satisfactory results.

(4) *antícipatòry* (HV: 261)

Non-cyclic stratum

					Non	.	.	.	.	*	RR	.	*	.	.	.
.	*	.	.	*	-cyclic	(.	*	.	.	*)		(.	*)	.	.	*
(.	*)	.	(.	*)	MSR,	(*	*)	*	(.	*)	SD	(*	*)	.	(.	*)
*	(*	*)	*	(*)	Alt.	(*)	(*)	(*	*)	(*)		(*)	(*)	*	*	(*)
{an	ti	cip}	{at	ory}	→	an	ti	cip	at	ory	→	an	ti	cip	at	ory

Burzio (1994: 16)(B94) says that primary stress is on the rightmost non-weak foot, i.e. rightmost weak feet (HW) will carry secondary stress. As weak syllables may be extrametrical word-finally (i.e. parsing is not right-hand exhaustive), post-tonic secondary stress is not limited to the penultimate syllable: it can occur on the penult (no extrametricality, as in *cóncentrà:te* = (cón.cen)(trà:.te)), on the antepenult (one syllable extrametrical, as in *invéstigà:tive* = in(vés.ti)(gà:.ti)ve) or on the third-last syllable (two extrametrical syllables, as in *invéstigàtively* = in(vés.ti)(gà:.ti)ve.ly). His account will be discussed in detail in Section 8.2 below.

H98 marks words that contain a long vowel in the last syllable by LLR Edge-marking, which gives rise to secondary stress on that syllable, due to the Rhythm Rule, cf. (5).

(5) **LLR Edge-marking in H98** (based on H98: 550)

								RR	*		
				MSR	*		*		(*		*
LLR Edge-m.	*	*	[*	a, c	(*	*	[*		(*	*	[*
→	ma	la	chite	→	ma	la	chite	→	ma	la	chite

[39] Actually, word-final *-y* in certain cases is syllabified late in the derivation (HV: 239) and so words with this ending have two surface syllables marked as invisible to stress rules. But the Alternator still sees it as one syllable, i.e. for our purposes now it is equivalent to words that are subject to normal extrametricality.

Though we have seen some relatively successful accounts, it is only B94's theory that is examined in this part of the dissertation in detail. The reason is that this account has been found the most successful one (see Section 2.8 in the Literature review) and the main aim of the dissertation is to check on a large number of words whether B94's predictions are correct.

8.2 (HW) foot: Burzio (1994)

B94 claims that secondary stress will be realised on a weak foot (HW) in rightmost position, if there is at least one other foot before it in the word. Weak feet are always headed by a heavy syllable, the foot *(LW) is regarded to be ill-formed (B94: 151). Naturally, if the weak foot is the only one in the word, it will get primary stress, as in *múte* = (mú:.te) = (HW). Weak syllables may be overt (headed by an acoustically weak vowel /ɪ/, /i/ or /ʊ/ or a syllabic consonant), e.g. *plainly* = (plain.ly) = (HW), *carbuncle* = (cá:r.bun)cle = (HH_n)W; or covert (not pronounced), when the weak syllable is headed by the null segment, which in writing appears as a mute *e* e.g. *mute* = (mú:.te) = (HW) or as "ø" if the word ends in a consonant e.g. *honestø* = (hó.nes)tø = (LH)W (B94: 16–17, 70–72). This duality (i.e. the existence of pronounced and unpronounced weak syllables) gives rise to the ambiguity of terms such as "penult". I will use these in the traditional sense, i.e. counting only the pronounced syllables, but I preferably avoid these labels. If a syllable is acoustically weak but it appears word-medially, as in *òrdinárily,* it counts as light rather than weak, i.e. weak syllables can be followed by only weak syllables. This is not explicitly declared in B94, but his analyses suggest this.

Weak syllables are the only syllables in B94 that are subject to extrametricality, i.e. can be left unparsed at the right edge of the word, as in *honest* above. Normally, there can be one or two extrametrical syllables, as in *pálatable* = (pá.la.ta)ble = (σLσ)W and *perfúnctorily* = per(fúnc.to)ri.ly = σ(Hσ)WW. The existence of three extrametrical weak syllables is questionable, though no explicit prohibition against)WWW is present in B94. Actually, the parsing (cú.mu.la)tively appears in B94 (p. 236). It is possible, however, that in *cúmulatively* B94 counts *-tively* as two syllables rather than three, as his analyses of words ending in *-átively* on the same page suggest.[40] These have a foot of the form (á:tively), as in *authòritátively* = au(thòri)(tá:tively). The final foot here is seemingly (HWWW), because *-tive* is normally analysed as two syllables *-ly* as one syllable. But such a foot is ill formed, since tetrasyllabic feet are excluded.

However, the parsing *authòritátively* = au(thò.ri)(tá:.ti.ve)ly = σ(LL)(HWW)W would be well-formed. At first sight, a second solution is also possible. B94 (p. 264) supposes that "stem-final null vowels are eliminated under suffixation except where needed by syllabification". Compare for example de.ve.lop.men.tɸ and ad.jus.tɸ.men.tɸ., where in *adjustment* the syllabification st.m or s.tm would both be ill-formed, whereas in *development* p.m is well-formed. In the case of *-tively* there is no such problem, tiv.ly is correct, i.e. the null vowel represented by a mute *e* can be suppressed. This fact has the unfavourable consequence that though B94's

[40] Syllable divisions are only occasionally given in B94, which often causes ambiguity.

analyses rely on the spelled form, sometimes (though in predictable cases, when a consonant-initial suffix is attached to a stem ending in a null vowel) the orthographical form cannot serve as a starting point.

The second solution, however, leads to another problem: if we analyse *-tively* as tiv.ly, the seemingly WWW (ti.ve.ly) pattern would change to HW (tiv.ly), because the consonant *v* cannot be suppressed and the onset *.vl is impossible. In B94's syllabified example on p. 264, *development* = de(vé.lop)(mèn.tɸ), the change LW→H for *-lop-* (i.e. de(vé.lo.pø) = σ(LLW) → de(vé.lop)(mèn.tø) = σ(LH)(H_nW)) did not cause problems, because the foot σ(LH) is acceptable, though not ideal. Word-finally, however, this change is crucial if we want to keep to the assumption that only weak syllables can be extrametrical, because *-tiv-* in tiv.ly now cannot be left unparsed as it is a H syllable. I suggest that this assumption on extrametricality should not be given up because this is one of B94's important observations that acoustically strong syllables are always parsed. I think word-finally—especially in the case of unparsed syllables—there is no need to reduce the number of syllables by one and the syllable division based on orthography can be maintained.[41] So the second solution has to be dropped. As a consequence of this decision, three extrametrical W syllables should be present in (cú.mu.la)ti.ve.ly, which means that the configuration)WWW should be allowed. Actually, *-ively* is the only sequence I found that may be parsed as)WWW. This only happens if the foot before *-ively* is ternary and *-i-* cannot be incorporated into it, because normally *-ive,* as a pre-stressed 1/2 suffix is parsed as i)ve, as in *evásive* = e(vá:.si)ve and *consécutive* = con(sé.cu.ti)ve. Consequently,)WWW cannot appear after a weak foot, which is binary by definition, because the first syllable of *-tively* would rather be incorporated into the preceding foot and form a ternary foot, e.g. *consécutively* is not *con(sé.cu)ti.ve.ly but con(sé.cu.ti)ve.ly. This is important because below I examine where a (HW) foot can appear. Based on our observations above, a weak foot will never appear before a sequence of 3 unparsed weak syllables.

Below table (6) shows all the environments in which a (HW) foot can appear. It examines the weight and number of syllables before and after the (HW) foot, and also the composition of the preceding foot. The chart has four columns, the first of which contains a number for each row. The second column ("Environment") shows the weak foot in the environments to be examined. The third column ("Constraints") shows those constraints that allow/disallow the configuration being discussed: it shows the well-formedness (✓) or the ill-formedness (*) of the feet that occur in the environment of the HW foot (based on Metrical Well-formedness Constraints) in the "Foot" section, the sequence that is extrametrical at the end of the word (these can only be W syllables) in the "Em." section, and whether a Metrical Alignment Constraint (Exhaustive Parse or Strong Retraction) is violated in the "Align." section. The last column contains examples. The parsings are mine.

[41] Another reason is that normally the null segment is replaced by the initial vowel of the ending, e.g. -a.te + -i.ve = -a.ti.ve, and in a consonant-initial suffix there is nothing to replace the vowel, though according to B94 this is what happens in *development*.

(6) **Logically possible places for a (HW) foot** (based on B94)

	Environment	Constraints			Examples
		Foot	Em.	Align.	
(6a)	#(H́W)#				(mú:.te), (háp.py)
(6b)	#(H́W)W#		W	*Parse	(mú:.te)dø, (háp.pi)ly
(6c)	#(H́W)WW#		WW	*Parse	(pléin.ti)ve.ly
(6d)	#σ(H́W)#	✓#σ(		*Parse	ap(plý:.ø), e(vá:.de)
(6e)	#σ(H́W)W#	✓#σ(	W	*Parse	il(lé.gi)ble
(6f)	#σ(H́W)WW#	✓#σ(	WW	*Parse	il(lá:.ti)ve.ly
(6g)	?#(ø.σ́)(H̀W)#	?#(ϕ.H́)			?(ø.chló:)(rì:.de)
(6h)	#(ø.σ̀)(H́W)#	✓#(ϕ.H̀)			(ø.crè:)(á:.te)
(6i)	*#..σ(σ́)(H̀W)#	*(σ)		*SR	*(hò:.me.o:)|(mó:r)(phìs.mø)
(6j)	#..(σ́σ)(H̀W)#	✓(H σ)/(L σ)			(áb.di)(cà:.te), (ìn.ca)(pá.ci)(tà:.te)
(6k)	#..(σ́σσ)(H̀W)#	✓(σLσ)/(σH_nσ)		*SR	(ín.can.ta)(tò:.ry)
(6l)	*#..(σ́σσσ)(H̀W)#	*(σ́σσσ)		*SR	(clás.si.fi)ca(tò:.ry)
(6m)	*#..(σ́σ)(σ̀σ)(H̀W)#	max. 1 post-tonic σ̀			—
(6n)	#(ø.σ̀)(H́W)W#	✓#(ϕ.H̀)(H́W)#	W	*Parse	(ø.crè:)(á:.te)dø
(6o)	#..(σ́σ)(H̀W)W#	✓(H σ)/(L σ)	W	*Parse	(áb.di)(cà:.te)dø
(6p)	#..(σ́σσ)(H̀W)W#	✓(σLσ)	W	*SR, *Parse	(ín.can.ta)(tò:.ri)ly
(6r)	#(ø.σ̀)(H́W)WW#	✓#(ϕ.H̀)	WW	*Parse	(ø.crè:)(á:.ti)ve.ly
(6s)	#..(σ́σ)(H̀W)WW#	✓(H σ)/(L σ)	WW	*Parse	in(vés.ti)(gà:.ti)ve.ly
(6t)	#..(σ́σσ)(H̀W)WW#	✓(σLσ)	WW	*SR, *Parse	

Parse = Exhaustive Parse; SR = Strong Retraction; ? = questionable parsing; * = ill-formed foot

Rows (6a–f) examine those cases where the weak foot is the only one in the word, i.e. its head is primary stressed, as in *góod.* Words belonging to (6a) are either monosyllabic (e.g. *púre*) or disyllabic (e.g. *wítty*) with stress on their first syllable. Two syllables are pronounced in some examples for (6b), e.g. *páinted,* and in oxytonic words belonging to group (6d), e.g. *embárk*. All other examples that match the templates in (6a–f) are pronounced with at least three syllables. If there are unparsed syllables before or after the (HW) foot, the violable constraint of Exhaustive Parse is violated. At the beginning maximally one syllable may be left unparsed (6e–f). As suggested in the previous chapter it can either be H, as in *applý,* H_n, as in *illégible* and L, as in *eváde.* After the weak foot, there may be extrametrical weak syllables, as in (6b–c, e–f).

In rows (6g–m) the words have more than one stressed syllable, and there is no extrametrical syllable at the end. Only the syllables and feet preceding the weak foot are

examined. An interesting case is that of disyllabic words. If both syllables of these words are heavy, as in *archduke*, both might be stressed because initially adjacent stresses are allowed, i.e. the foot structure of these items will be (ϕ.H)(H.ϕ)(cf. rows (6g–h)). The question is which foot will be primary stressed, since both contain a null segment, i.e. neither is a 'non-weak foot', which would normally get the primary stress. B94 (p. 107–108) claims that if primary stress is on the first syllable of the word, the second one is not secondary stressed, despite the full or long vowel. That is to say, in B94 words would have a (HH) foot, as in *chloride* = (chló:.ri:)de = (HH)W. Others, e.g. Fudge (1984) would give this word as *chlóride.* This question will be discussed in detail in Section 8.3 below.

As monosyllabic feet are excluded, a stressed syllable cannot appear immediately before a weak foot (6i). There are some words that display this pattern, for example words ending in *-ism,* e.g. *hètero:séxìsm.* As already discussed in Section 6.2 above, B94's solution is similar to the one he gives for *chlóride.* In his account *-ism* is unstressed, i.e. parsed as is)mø, as in (hè.te.ro:)\|(séx.is)mø. Other examples of this kind end in *-ate,* e.g. *cìrcumvállàte, where again* B94's solution is similar: (cìr.cum)\|(vál.la:)te. These examples will be analysed in chart (8) below.

A binary primary stressed foot before the weak foot is ideal (6j): Strong Retraction says that this pattern is preferred, as in *géneràte.* A ternary foot can also occur (6k), if Strong Retraction is overridden by Stress Preservation, i.e. the stem of the word has stress three syllables before the ending, as in *óxigenàte,* derived from *óxigen.*

A tetrasyllabic foot should not occur before a weak foot, as *(σσσσ) feet are excluded (6l). Here three unstressed syllables are between two stressed ones. There are some words which follow this pattern, though not many. B94 (pp. 308–309) says that this might occur when a sequence of suffixes is attached to the word and he analyses these as exceptionally having an unmetrified syllable in the middle, i.e. *clássificatòry* = (clás.si.fi)ca(tò.ry). His examples also include words where the primary stress follows this unmetrified syllable, e.g. *amèricanizátion, chàracterizátion.*

(6m) is impossible, because primary stress either falls on the last foot (if it is non-weak), as in *dèrivátion* = (dè.ri)(vá:.ti.o)nø, or on the penultimate foot if the last one is weak, as in *devélopmènt* = de(vé.lop)(mèn.tø), but not earlier, given that consecutive weak feet are excluded, as B94 (p. 278) tentatively suggests. (7) summarises what kind of syllables and feet can appear before a weak foot, see examples in chart (6) above. Cases (7d–e) are the ones where the weak foot bears secondary stress.

(7) **Well-formed configurations before a (HW) foot**

(7a) nothing; and the foot as the only foot of the word is primary stressed (6a–c);

(7b) an unparsed syllable of any kind (L, H_n, H), the foot is again primary stressed (6d–f);

(7c) a degenerate foot (ø.H), which according to B94 is secondary stressed and the final weak foot gets the primary stress (6h);

(7d) a binary foot with primary stress, the weak foot is secondary stressed (6j);

(7e) a ternary foot with primary stress, the weak foot is secondary stressed (6k);

Rows (6n–t) display words that have one or two extrametrical syllables after the weak foot. The sequences before the weak foot correspond to (7c–d) above. As pointed out above, three weak syllables here probably cannot exist. As there is at least one unparsed syllable in these rows, all configurations violate Exhaustive Parse. If a ternary foot precedes the weak foot, Strong Retraction is also violated.

Now let us see the classes of words that are predicted to exist. As noted earlier, certain endings bear secondary stress. A typical example is the verb-forming *-ate* /eɪt/, which has the structure (a:.te) = (HW) (B94: 279). This ending is important for us for two reasons: one is that post-tonic secondary stress can be easily demonstrated on it, the other is that this ending is part of other, more complex endings (e.g. *-ation, -ative, -ator, -atory, -ature*) (F84: 61–63), some of which cause problems and will be discussed in detail below: *-ative* in Chapter 9 and *-atory* in Chapter 10. A typology of *-ate* words is given in (8).

F84 (p. 60) says that the suffix *-ate* is pre-stressed 2 in the unmarked case, which in B94 is ensured by Strong Retraction (SR), i.e. a binary foot precedes the ending (8a), which is the class (6j) in the above chart, as in *accúmulàte*. In disyllables the ending is autostressed (8b), as in *ròtáte* (cf. (6g–h) above). These two types of words are regular.

(8) **Analysis of *-ate* words** (verb-forming *-ate*)

	Pattern	Example	Analysis	Constraints
(8a)	..(σ́σ)(à:.te)#	*capácitàte*	ca(pá.ci)(tà:.te)	✓(σσ), Strong Retraction
(8b)	#σ(á:.te)#	*crèáte*	(ϕ.crè)(á:.te)	✓(ø.H)
(8c)	..(σ́σσ)(à:.te)#	*óxygenàte*	(óx.y.ge)(nà:.te)	*SR, ✓(σLσ), Stress Preserved
(8d)	..σ́(à:.te)#			*(σ́) ✓(ϕ.σ̀)
		i) *cìrcumvállàte*	? (cìr.cum)|(ϕ.vál)(là.te)	CCI1 (cìr.cum)|, ?#(ϕ.Ħ)(ĦW)#
		ii) *dèhýdràte*	? (ϕ.dè:)(ϕ.hý:)(drà:.te)	autostr. (ϕ.dè:), ?#(ϕ.Ħ)(ĦW)#
		iii) *ìmprégnàte*	? (ϕ.ìm)(ϕ.prég)(nà:.te)	str. rep. *im-*, *(σ́), *SR
		iv) *seqúestràte*	? se(qués.ϕ)(trà:.te)	str. rep. *se-*,*(σ́), *SR

The first class of exceptions in F84 is that of words in which primary stress falls three syllables away from the ending (8c)(cf. (6k) above). In these words Strong Retraction is violated, but a well-formed ternary foot is built, i.e. Metrical Well-formedness is not violated. Moreover, in these words stress is preserved from the stem (*óxygenàte, óxygen*), which explains the violation of Strong Retraction. Several examples for this phenomenon are given in Appendix 1 (discussed in Section 6.3.1 above).

As for the other class of exceptions (8d), F84 (p. 60) gives four words that are primary stressed on the syllable before the ending. If we apply the analyses given for prefixes and compound-initials in Section 5 above, these words still remain problematic, which is not

surprising since there are adjacent stresses word-medially. (8d.i) should be but is not stressed similarly to *crèáte,* because the compound-initial constitutes a separate domain. The only solution we can give is highly exceptional: primary stress falls on a degenerate foot (i.e. case (6a)). The situation is similar in (8d.ii), where the autostressed prefix is a foot on its own. (8d.iii–iv) are even more problematic: here the prefixes belong to the stress-repellent group, and as such should get the stress assigned by the ending (i.e. *ímpregnàte, séquestràte*). These regular forms are the most frequent British variants according to Wells, while (8d.iii) is the preferred American pronunciation. It seems these forms can only be analysed if a null vowel is inserted (before or after the stressed syllable), but this method is highly exceptional. Since null vowels are normally not inserted word-medially, whether they appear before or after the offending syllable is equally wrong. Furthermore, it is still a mystery how primary stress is assigned to these strange feet. I have no explanation for them.

B94 (Fn. 17, p. 211) says about words like those in (8d) that the ending in them is exceptionally incorporated into the preceding foot, i.e. *sequéstra:te* = se(qués.tra:)te. Here Suffix Consistency is violated, because *-ate* is not parsed as (a:te), but the emerging foot (HH) is well-formed. A similar solution is proposed for disyllabic words in B94 (cf. Section 8.3 below).

As we have just demonstrated, *-ate* words provide examples for all the three acceptable groups in the first part of the table in (6): disyllabic words (6h), e.g. *créà:te*, binary pattern before the ending (6j), e.g. *ábdicà:te,* and ternary foot before the ending (6k), e.g. *óxigenà:te*. If we attach a suffix to these words that is parsed as an extrametrical weak syllable, we get the patterns corresponding to (6n–p). Such a suffix is the past tense marker *-ed* = e)dϕ, whose mute *e* replaces that of the ending *-ate*, and thus leaves the original pattern of the stem untouched (i.e. it is stress-neutral).

Finding examples for the classes (6r–t) is a bit more complicated, because here we need two extrametrical weak syllables added to the parsed weak syllable of the weak foot. This means that we need an ending or the combination of two endings with the structure)WW or W)WW that can attach to our stem with a final weak foot. At first sight *-ive* is a good candidate, as in words like *génerative* = (gé.ne.ra)ti.ve it is parsed as)WW, but if the original pattern of the *-ate* verb is preserved, as in *invéstigàtive*, the parsing of the ending changes to i)ve. This change in parsing is discussed in detail in Section 9 below. We could still argue that the addition of one more ending yields the desired pattern)WW, e.g. (à:.ti)vely. Though we have seen that B94 would give a different analysis to these items, I suggested that the null segment at the end of *-ive* should be kept and thus we have the desired structure (HW)WW (cf. page 152). The same complex ending *-atively* can give examples for three unmetrified weak syllables, if the whole sequence is stressless, as in *cúmulatively* = (cú:.mu.la)ti.ve.ly*,* but this only appears after a ternary foot.

This section showed that post-tonic secondary stress is always due to a (HW) foot preceded by another foot in B94, and examined the environments in which this foot can appear. In monosyllabic and some disyllabic words, such as *gó* =gó:.ø = (HW) and *háppy* = (háp.py) = (HW), the stem consists of a (HW) foot, and as the only foot in the word will be primary stressed.

In longer words, however, this foot may appear due to the concatenation of the stem and a suffix, e.g. *illégible* = il+ leg + i)ble = il(lé.gi)ble. The typical case, however, is where (the last consonant of the stem and) a suffix forms the weak foot, as in *ábdicàte* = (áb.di)(cà:.te). Suffixes have pre-determined structure in B94 (cf. Chapter 5 above). Certain suffixes, such as *-ate, -ize, -ite* etc. form a foot on their own, which is a weak foot due to the final weak syllable. If concatenated to a stem, these endings will carry secondary stress. In the sections that follow problematic cases will be analysed in detail.

8.3 Disyllabic words: #HH#

As already mentioned, disyllabic words that are composed of two overt heavy syllables are sometimes problematic for B94. The logically possible patterns of #HH# words are given in (9). H is understood in B94's sense, i.e. if words are parsed on an orthographic basis. Since there must be exactly one primary stressed syllable in every word and there are three levels of stress (primary, secondary, zero), there are four possible patterns, all of which are exceptional from a certain point of view. These will be discussed below. The analyses are mine, i.e. may deviate from B94.

(9) **Logically possible patterns of #HH# words**

	Pattern	**Example**	**Parsing**
(9a)	σ́σ	*rábbi*	(ráb.bi:) = (HH)
		témpest	(tém.pes)tϕ = (HH)W
(9b)	σσ́	*applý*	ap(plý.ϕ) = H(HW)
		accépt	ac(cép.tϕ) = H(HW)
(9c)	σ́σ̀	*díòde*	?(ϕ.dí:)(ò:.de) = (ϕ.H)(HW)
(9d)	σ̀σ́	*crèáte*	(ϕ.crè:)(á:.te) = (ϕ.H)(HW)

The primary–zero pattern (9a) is problematic if we keep to the traditional view that long or unreduced vowels manifest some degree of stress. This assumption is challenged by B94 (pp. 48–52, 112–113), who claims that full or even long vowels, as in *rab<u>bi:</u>* may appear in unstressed position. Long vowels naturally make the syllable heavy, but heavy syllables may appear in unstressed position, though in the majority of cases they attract stress (cf. Metrical Alignment (B94: 166)). Therefore, in B94's analysis this class is regular.

Group (9b) (zero—primary pattern) is interesting for two reasons. One is that an initial heavy syllable remains unparsed, which problem has been discussed in Chapter 3. I suggested that the constraint *#H(should be loosened because there are a number of cases where an initial strong syllable is unstressed. The other interesting thing here is that a null vowel is inserted after a word-final vowel in cases like *applý*, which solution is proposed by B94 (p. 51), but as pointed out in Section 5.1.2 above, the argumentation for this analysis is not without problems.

The cases that really interest us here are (9c) and (9d), since these contain a secondary stressed syllable. These both have the foot structure (ϕ.H)(HW), but in (9c) primary stress is on the first foot, while in (9d) it is on the second. That is to say these two patterns are the mirror image of each other. Words with the same foot-structure that display two different stress-relations are always problematic (cf. Section 10.3 below). The reason is that primary stress regularly falls on the rightmost non-weak foot (B94: 16), which is an unambiguous relation in most cases. However, if there are only weak feet in the word, it is not clear which should be primary stressed, because the constraint for primary stress does not cover these cases. If the word contains one weak foot alone, this weak foot will bear the main stress, e.g. *accépt* = ac(cép.tϕ) = σ(HW), as there is no other choice. B94 seems to regard a degenerate foot (ø.H) as weak as well, since it is considered to be the iambic counterpart of (HW) (cf. B94: 97–100, 368) In (9c) and (9d), therefore, there are two weak feet altogether, therefore the situation is ambiguous. We expect that the pattern σ̀σ́ (9d), i.e. primary stress on the final foot, is preferred for two reasons. Firstly, the second foot is the rightmost one. Secondly, the (ϕ.H) foot is right-headed and as such is more marked than the (HW) foot. We might expect that primary stress will fall on a less marked foot, i.e. the second one should be more prominent. B94 (pp. 107–108) suggests that the (9c) pattern does not exist at all because in words like these the final syllable is stressless with a long vowel, i.e. *diode* will be analysed as *díode* = (dí:.o:)de. This way the problem disappears.

8.3.1 A possible analysis of #σ́σ̀#

As already noted in the Introduction above (Chapter 7), post-tonic secondary stresses are judged differently by scholars. This is also true for disyllabic words. Here I cite the American Heritage Dictionary (1994), because its judgements are radically different from that of Wells. In the American Heritage the number of words following pattern (9c), i.e. #σ́σ̀# far exceeds the number of (9d), i.e. #σ̀σ́#, words, though B94's analyses would predict the opposite. In the first group there are 7144 items, though these are mostly compounds or names (e.g. *clúbfàce, Mískòlc*[42]). However, the number of these is still very high, because there are certain endings that are considered to be secondary stressed here, e.g. *-oid* (86 items), *-ile* (18 items), *-ide* (16 items), *-ae* (12 items) etc. In the (9d) group there are only 9 items (4 names), given in (10) below.

[42] This word is the name of a Hungarian town. In Hungarian it is only the first syllable of words that is stressed, i.e. *Mískolc.* This is also true for names like *Kodály,* pronounced as /ˈkodaɪ/. Accents on letters in Hungarian denote length/quality, not stress, i.e. *a* /ɔ/, *á* /aː/.

(10) **Words with pattern #σ̀σ́# in the American Heritage Dictionary** (1994)

archpriest	*Bethel*	*gadzooks*	*Kodály*	*oyez*
drawee	*Canton*	*outback*	*Saint-Lô*	

This list does not contain typical examples of σ̀σ́ of Wells such as *crèáte, àrchdúke,* which are given with a long but unstressed vowel in the initial syllable in this dictionary. Random House (1994) gives words in (10) with patterns different from σ̀σ́. This means that the judgements of dictionaries concerning this pattern considerably differ. In order to see this, look at table (11), which compares the dictionaries I consulted. I selected 11 test words, which should contain a secondary stressed syllable, concentrating on disyllabic items (11a–f). I checked these in the dictionaries and copied all the variants that had different stressing, i.e. variation in vowel quality is not recorded here. As for vowel symbols, I followed Wells in all cases (e.g. Kenyon—Knott (1953) have e instead of eɪ) so that the data would be easier to compare. Those cells where a variant has the #σ̀σ́# pattern are shaded and cells with a pattern #σ́σ̀# have thick borders.

For comparison, some words that are longer than two syllables have also been included (11g–k). I included these to show that it is possible that a dictionary gives secondary stresses but not for disyllables. Rows (11l–n) show the proportion of marked pre- and post-tonic secondary stresses in disyllabic words, the proportion of all marked pre- and post-tonic secondary stresses, and the number of all secondary stresses respectively.

The American Heritage Dictionary (1994) marks most adjacent stresses, while Random House (1994) marks none. Wells has the most words with #σ̀σ́# and all pre-tonic secondary stresses, but does not mark post-tonic secondary stresses at all. It seems the presence or absence of secondary stresses at debatable places mainly depends on the dictionary writer.

(11) **Secondary stresses—differences in dictionaries**

		does not show post-tonic σ̀		shows post-tonic σ̀		
		Wells	**R—H**	**RHUD**	**K—K**	**AHD**
a)	*create*	kriˈeɪt ˌkriːˈeɪt ˈkrɪeɪt	kriˈeɪt	kriːˈeɪt	krɪˈeɪt	kriːˈeɪt
b)	*drawee*	drɔːˈiː ˌdrɔːˈiː	ˌdrɔːˈiː	drɒːˈiː	drɔˈiː	ˌdrɒːˈiː
c)	*chloride*	ˈklɔːraɪd	ˈklɔːraɪd	ˈklɔːrɪd ˈklɔːraɪd	ˈklorɪd ˈkloraɪd	ˈklɒːˌrɪd ˈklɔːrɪd
d)	*childhood*	ˈtʃaɪəldhʊd	ˈtʃaɪəldhʊd	ˈtʃaɪldhʊd	ˈtʃaɪldˌhʊd	ˈtʃaɪldˌhʊd
e)	*mismatch*$_V$	ˌmɪsˈmætʃ	mɪˈsmætʃ ˌmɪsˈmætʃ	mɪsˈmætʃ	mɪsˈmætʃ	mɪsˈmætʃ
f)	*diploid*	ˈdɪplɔɪd	ˈdɪplɔɪd	ˈdɪplɔɪd	—	ˈdɪpˌlɔɪd
g)	*adenoid*	ˈædɪnɔɪd	ˈædɪnɔɪd	ˈædnˌɔɪd	ˈædnˌɔɪd	ˈædnˌɔɪd
h)	*alkaline*	ˈælkəlaɪn	ˈælkəlaɪn	ˈælkəˌlaɪn ˈælkəlɪn	ˈælkəˌlaɪn ˈælkəlɪn	ˈælkəlɪn ˈælkəˌlaɪn
i)	*hermaphrodite*	hɜːˈmæfrədaɪt	hɜːˈmæfrədaɪt	hɜˈmæfrəˌdaɪt	hɜˈmæfrəˌdaɪt	hɜˈmæfrəˌdaɪt
j)	*assimilate*$_V$	əˈsɪmələɪt	əˈsɪmɪleɪt	əˈsɪməˌleɪt	əˈsɪmlˌeɪt	əˈsɪməˌleɪt
k)	*adaptation*	ˌædæpˈteɪʃən	ˌædæpˈteɪʃən	ˌædæpˈteɪʃən	ˌædəpˈteɪʃən	ˌædæpˈteɪʃən
l)	#σ̀σ́# : #σ́σ̀#	3:0	2:0	0:0	0:1	1:3
m)	..σ̀..σ́.. : ..σ́..σ̀..	4:0	3:0	1:4	1:5	2:7
n)	all σ̀	4	3	5	6	9

Wells = Wells (1990), R—H = Roach—Hartman (1997), RHUD = Random House (1994),
K—K = Kenyon—Knott (1953), AHD = American Heritage Dictionary (1994)

After this short digression on the judgements of dictionaries, let us get back to words like *chló:ri:de.* Certainly, B94's method of regarding final long or full vowels unstressed could solve the problem of all words with the pattern #σ́σ̀#. I think it would not cause any problems in many cases, e.g. *iamb, rhubarb* analysed as (í:.am)bø = (HH$_n$)W, (rhú:.ba:r)bø = (HH)W respectively. Maybe it is not a good solution with suffixed words (e.g. *algoid, anile, childhood*), because—at least according to the American Heritage Dictionary (1994)—in these words the ending is pronounced as it is in longer words with the same ending. Wells also gives e.g. *diploid* /ˈdɪplɔɪd/, *ellipsoid* /ɪˈlɪpsɔɪd/ and *adenoid* /ˈædɪnɔɪd/ (and also *ellipsoidal* /ˌelɪpˈsɔɪdəl/) for example, with the same vowel in all cases. The same can be witnessed with words ending in *-ism,* which all have post-tonic tertiary stress in Wells, irrespective of the number of syllables between the ending and the primary stress, e.g. *séxìsm, eróticìsm, coló:nialìsm.* This suggests that in spite of the fact that a primary stressed syllable is normally not followed immediately by another stressed syllable, the pronunciation of these endings is the same in all cases. If so, the endings should either all be secondary stressed or all be stressless.

If we look at B94's analyses it seems that he regards *-oid, -ide, -ile, -ine* as unstressed, i.e. parsed as oi)dϕ, i:)de, i:)ne respectively. This means that these are unstressed even in longer words, e.g. *móngoloid,* which is in line with what we have said. However, B94 (p. 210) gives pairs like *álkalì:ne ~ álkali:ne, hermáphrodì:te ~ hermáphrodi:te*, claiming that secondary stress is also possible here in some cases. We must note that these pairs are not present in any of the dictionaries consulted (cf. (11h–j)). It is also not clear how these variants are differentiated. B94 does not give references to phonetic measurements, for example, which could decide between the long, stressed and long, unstressed pronunciations. If such pairs exist, or if a certain ending is stressed in longer words, Metrical Consistency of suffixes is violated by disyllabic forms.

As for the ending *-hood* (11d), this is considered to be a secondary stressed ending that constitutes a foot on its own (B94: 277). As such, it does not interfere with stem stresses. The case where the ending attaches to a monosyllabic stem is not discussed. However, an example is given where the stem is oxytonic, namely *adúlthòod* as a(dúl.tϕ)(hòo.dϕ)[43], which is similar to a monosyllabic stem, since monosyllables are necessarily oxytonic. In this example the ending does not replace the stem-final null vowel, which means that *chíldhòod* could be analysed as (chí:l.dϕ)(hòod.dϕ). This analysis, however, does not explain why the first (HW) foot is primary stressed. Furthermore, B94's general analysis of surface disyllables (i.e. (chí:ld.hoo)dø) is not open to this form, because the cluster *-ldh-* cannot be parsed in any well-formed way, i.e. the stem-final null vowel must be retained.

I do not have a solution which is more elegant, but maybe the problem can be looked at from a different angle. Let us say that secondary stress in items like *childhood* may follow primary stress as some dictionaries propose, i.e. *chíldhòod*. I think it is quite logical to say that in these words, primary stress can fall on either weak foot, since neither satisfies the condition of being a non-weak foot. Whether a certain item is stressed as primary–secondary or secondary–primary is an idiosyncratic feature of that item. This solution is theoretically no better than that of B94, but it gives way to judgements of dictionaries like the American Heritage (1994).

8.3.2 Noun–verb pairs

A special class of disyllabic words with the surface structure #HH# is that of those noun–verb pairs which differ in their stress pattern, e.g. *éxpòrt*$_{N}$ ~ *èxpórt*$_{V}$. In these word pairs the noun is initially stressed (usually with a full/long vowel in the second syllable), while the verb is finally stressed, generally with secondary stress on the first syllable.

[43] B94 analyses *-hood* as (hoo.dϕ), which is questionable, since B94 (p. 151) only allows (HW) feet and not (LW) feet. The fact that the ending is spelled with a double vowel does not mean it is long (it is always pronounced /ʊ/, as opposed to *kangaroo* /u:/), i.e. (hoo.dø) = *(LW). The correct parsing should be (hood.dϕ), with a bipositional consonant.

As noted in Section 5.1.3, if these words are prefixed, the prefix is stress-repellent in verbs and is 'primary stressed' in nouns (cf. F84: 189–192). I suggested that primary stressed prefixes should constitute a foot-head. If we follow B94 in saying that words like *éxpòrt*$_{N}$ do not have post-tonic secondary stress but are analysed as (éx.po:r)tø, primary stressed prefixes should have a left boundary before them as a pre-determined parsing, as in *ex-* = (ex. Given this parsing, in disyllabic words—as monosyllabic feet are excluded in B94—the first syllable will be primary stressed. As these nouns do not contain a suffix (contrary to *childhood*), this analysis is acceptable.

B94 (pp. 166) accounts for this change in pattern by the constraint on Metrification of verbs (12). This says that verbs tend to parse the final null segment, as in *èxpórt*$_{V}$ = (ø.èx)(pó:r.tø), while words belonging to other word classes[44] generally do not, i.e. *éxpòrt*$_{N}$ = (éx.po:r)tø.

(12) **Metrification of verbs** (B94: 166)

... ø)#

B94's analysis gives the same result for disyllabic nouns as my analysis, without recourse to a pre-determined parsing of a prefix. This analysis can be applied in those noun–verb pairs as well, which do not have a prefix, e.g. *tórmènt*$_{N}$ ~ *tòrmént*$_{V}$. These are treated as exceptional in F84 and are listed (Table 3.3. on p. 32). Still, if prefixes in general have pre-determined structures, my analysis will provide correct patterns. On this issue see Section 5.1.2 (discussion of example (35)) as well.

I hope to have shown that the problem of #σ́σ̀# ~ #σ̀σ́# is rather complicated. B94 analyses the secondary–primary (#σ̀σ́#) pattern as #(ø.H)(HW)#, and claims that primary stress is on the rightmost foot. This parsing is followed by disyllabic #HH# verbs. For the primary–secondary pattern he suggests that the second syllable of these words is unstressed, instead of being secondary stressed, but the vowel in it is full, i.e. #(HH)W#. This is the pattern of disyllabic #HH# nouns. I tried to show that this solution is not without problems, because some words, such as those ending in *-hood,* violate suffix consistency, i.e. the pre-determined parsing of the suffix is abandoned. In some words, such as *childhood,* B94's solution is inapplicable due to the word-internal null segment. As for noun–verb pairs, B94's suggestion accounts for the facts correctly. If the word pair in question contains a prefix, it is stress-repellent in verbs and is 'primary stressed' in nouns. I suggested that the latter group has a pre-determined parsing, namely a left foot boundary before the prefix. This analysis also gives correct results.

[44] I claim in Chapter 5 that classical compound-finals, e.g. *-graph* should also parse the final null segment, together with classical suffixes, such as *-ia*.

9. THE ENDING *-ATIVE*[45]

Another problem in connection with post-tonic secondary stress is posed by the ending *-ative,* which follows more than one pattern. It is a complex ending that attaches to a number of stems, as shown in (13). The ending itself is composed of the verb forming *-ate* and the adjective forming *-ive*, but "seems to form a single [...] suffix for stress purposes, irrespective of the derivational structure of the word" (F84: 61).

(13) ***Stems of -ative items***

a) verbs ending in -ate:	*álternate—altérnative*
b) other verbs:	*accúse—accúsative*
c) bound stems:	*pejórative*
d) non-verbal free stems:	*cálm—cálmative*

Derived items ending in *-ative* generally follow one or two of the three stress patterns shown in (14) below, as B94 (pp. 295–301) observes. If the ending is secondary stressed (i.e. has a long vowel *-a:tive*), the primary stress will fall two syllables before the stress (14a), due to Strong Retraction. If the ending is unstressed, primary stress either falls two syllables away (14b), or on the immediately preceding syllable (14c). Multiple patterns (i.e. more than one pattern followed by the same word) are quite frequent in this class, e.g. *pejórative* ~ *péjorative*.

(14) **Patterns displayed by *-ative* words** (based on B94: 295–301)

(14a) *invéstigà:tive*	σ́ σ à:tive
(14b) *génerative*	σ́ σ ative
(14c) *affí:rmative*	σ́ ative

This section will examine what factors determine the choice between the above patterns. Four earlier approaches to the problem are discussed briefly: Nanni (1977), Halle—Vergnaud (1985), Burzio (1994) and Halle (1998). Since these approaches (except for Nanni (1977), who uses Liberman—Prince (1977)'s system) have been described in the Literature review, the rules and mechanisms are not repeated here, I give only the derivations. Their findings are checked against a corpus of 135 polymorphemic *-ative* words. The corpus has been manually collected from Wells. As Wells does not mark post-tonic secondary stresses, I considered *-ative* stressed when pronounced with a full vowel, i.e. /eɪtɪv/. All words ending in *-ative* have been selected but items like *dative* which obviously do not contain the ending *-ative* have been dropped. Both British and American pronunciations are analysed.

[45] An earlier version of this section was published as Wenszky (1997).

9.1 Metrical trees: Nanni (1977)

Nanni (1977)(N77) uses Liberman—Prince (1977)'s (LP) framework to account for the stress pattern of *-ative* words. In LP's system the English Stress Rule (ESR) marks certain vowels stressed and a metrical tree is constructed over the word, whose nodes are labelled by the LCPR (cf. Section 2.2). The metrical tree shows the relative prominence of two adjacent syllables or groups of syllables. After the selection of stressed syllables and the construction of the labelled tree diagram, destressing rules may apply to vowels in order to remove unwanted stresses. Destressing, however, cannot result in an ill-formed structure: metrically strong syllables (syllables immediately dominated by an *s* node in the tree) cannot be reduced (LP: 290).

N77 assumes that words ending in *-ative* are weak retractors (marked ~b in the lexicon). That is to say, after stressing *-átive*, the ESR will assign [+stress] to the vowel in the immediately preceding syllable if it is heavy, otherwise the stress will fall on the vowel in the second syllable from the ending. If we apply these rules to the three examples given in (14a-c), the following patterns will arise (vowels with the feature [+stress] are marked with an acute accent.)

(15) (16a) ínvéstigá:tive
(17b) génerá:tive
(18c) áffí:rmá:tive

Now tree-construction can begin, but as N77 (pp. 755–756) observes, in order to avoid main stress on the ending (i.e. **invèstigá:tive*) we must mark the morpheme *-ive* extrametrical (invisible to the stress rules). The two rules at play here are the Stray Syllable Adjunction (SSA) and Foot Formation (FF). SSA ensures that an unparsed, previously extrametrical, syllable will be parsed into the nearest maximal left foot. If a foot is too large (containing 4 or more syllables), it is split into two feet by FF: the last two *weak* syllables will form a new, weak foot, headed by a syllable containing a [+stress] vowel.[46] In (19) the essential points in the derivation of the stress pattern of *investigative, generative* and *affirmative* are shown. Extrametrical syllables are enclosed in angled brackets, and syllables which should be destressed in the course of derivation are underlined. Tree building is only shown after the last application of ESR, because trees built before are always deleted by Deforestation.

(19) **Derivation of *-ative* words based on Nanni (1977)**

(19a) the last syllable is marked extrametrical and the ESR assigns [±stress] to vowels, these words are Weak Retractors, i.e. maximally a CVC syllable is skipped by the ESR

i) in.ves.ti.ga:t<ive> ii) ge.ne.ra:t<ive> iii) af.fi:r.ma:t<ive>
\+ + - + (-) + - + (-) + + + (-)

(19b) binary branching metrical trees are built above the words (leaving extrametrical syllables untouched), which are labelled by the LCPR

i) ii) iii)

s s
s s s

w s w w <ive> s w w <ive> w s w <ive>
in ves ti ga:t <ive> ge ne ra:t <ive> af fi:r ma:t <ive>
\+ + - + (-) + - + (-) + + + (-)
↓ ↓ ↓

(19c) the extrametrical syllables are incorporated into the tree by SSA

i) ii) iii)

s s
s s
s s s

w s w w w s w w w w s w w
in ves ti ga:t ive ge ne ra:t ive af fi:r ma:t ive
\+ + - + - + - + - + + + -
↓ ↓ ↓

(19d) where necessary (in i) and ii) but not in iii)), new feet are formed by FF

i) ii) iii)
s s

s w s w s

w s w s w s w s w w s w w
in ves ti ga:t ive ge ne ra:t ive af fi:r ma:t ive
\+ + - + - + - + - + + + -

Now we have to account for the destressing of the vowels in the underlined syllables. LP propose that weakening occurs in three positions (20).

(20) **Destressing in LP** (based on LP: 287–291)
(i) word-initially immediately before a stronger stressed syllable (*police*),
(ii) in medial open syllables before a more strongly stressed syllable (*definition*) and
(iii) in prefixes which are followed by a more strongly stressed syllable (*MacDonald*).

---

[46] FF creates a tree configuration that is unattested otherwise: a branching right node is labelled *w*. The LCPR would labe this node *s*. As noted in Section 2.2, in LP this is the only way to derive post-tonic secondary stresses.

Additionally, a vowel may also lose its stress when it immediately follows the primary stressed syllable of the word, due to Poststress Reduction (LP: 291). These are all included into the rule of English Destressing (LP: 290). The vowels to be reduced in *invéstigà:tive* and *affí:rmative* can all be destressed by this rule. That of *génerà:tive,* however, cannot, because here the main stress does not immediately precede or follow the syllable in question. Therefore N77 proposes a special destressing rule for *-ative* items, given in (21). (21) says that the *á* of the suffix *-ative* is optionally reduced if it is immediately preceded either by a vowel (*initiative*) or by a vowel + sonorant sequence (*nominative*).

(21) ***At*-Destressing (optional)** (N77: 758)

$$A \rightarrow \begin{bmatrix} -\text{stress} \\ -\text{long} \end{bmatrix} \;/\; V\ ([+\text{sonorant}]) + \underline{\quad\quad}\ \text{tiv}$$

The vowel in *générà:tive* meets the structural description of (21), but the rule cannot apply. The reason is that *à* is in a syllable immediately dominated by a strong node, cf. 19d.ii. Syllables like this cannot be reduced, because the result would be an ill-formed configuration. To avoid this, N77 proposes that *At*-Destressing should apply before Foot Formation creates a new foot headed by *rà*. The end of the derivation of *génerative* will therefore be (22) (taking (19c.ii) as the starting point).

(22) a) the result of SSA b) *At*-Destressing (21)

```
        s                               s
    s                               s

  s    w    w    w            s    w    w    w
  ge   ne   ra:t ive    →     ge   ne   rat  ive
  +    -    +    -            +    -    -    -
```

c) Foot Formation is inapplicable because the third syllable now is [-stress] and therefore cannot be immediately dominated by a strong node in the metrical tree.

The theory described above makes good predictions in the majority of cases with a rather complicated rule system. It allows for some variation, because the application of *At*-destressing is optional. Due to the ESR, however, one string cannot have two different distributions of [+stress] syllables. This is needed, however, in words like *connótative ~ cónnotàtive.* N77 (p. 755) remarks that she cannot account for these examples. These items seem to behave as if they were Long Retractors and Weak Retractors at the same time. As discussed in the Literature review (Section 2.2), there are other words with multiple patterns where the possibility of belonging to two retraction classes would solve the problem, e.g. *dìssimilárity ~ dissìmilárity.*

Furthermore, the stress pattern of some *-ative* words simply cannot be generated by the ESR. These examples include (i) *múltiplicàtive*, which behaves as a Long Retractor, i.e. "migrated" out of the class of Weak Retractors and (ii) *affrícative* which should not be stressed on an open syllable before the ending (see Appendix 10, Group 1 for the full list of 36 items). Thirdly, there are words which do undergo *At*-destressing, though *-ative* is not preceded by a single vowel plus an optional sonorant, but by an obstruent, as in *quálitative* (see Appendix 10, Group 2 for the full list of 20 variants) or by a consonant cluster, as in *admínistrative, cóntemplative, íllustrative, législative* (this is a full list, cf. Appendix 10 Groups 3–4). In sum, N77's *At*-Destressing cannot account for 16 per cent of a corpus of 387 variants (23).

(23) **Number of problematic variants in the corpus**

	Group 1	Group 2	Group 3	Group 4	Total
Br	26	15	1	4	46
Am	10	5	1	1	17
Total	36	20	2	5	63
Percentage (Total 387)	9	5	0.5	1.5	16

9.2 A grid-only approach

Halle—Vergnaud (1987)(HV) follow N77 and create a special rule for words ending in *-ative,* though in a very short and undetailed account. Below I will present the derivation of *affírmative* following HV. The derivations of *ínvestigàtive* and *génerative* are not shown, because HV's rule system will be found insufficient for deriving the pattern of any word ending in *-ative,* as the derivation of *affírmative* will show. The derivation of the other two example words would face problems at the same point as the derivation of *affírmative* does. As will be demonstrated, HV apply the Rhythm Rule in an environment that is not allowed, i.e. they contradict their own theory.

HV postulate that *-ative* is a separate stress domain, therefore up to a certain point in the derivation the stem and the ending are treated as separate words (this will be marked by braces around the constituents).[47] The first step in the derivation is to place asterisks over the potential stress bearing elements, then the Accent Rule aligns heavy syllables with stresses. The Accent Rule does not count the final consonant of unsuffixed verbs and adjectives. HV do not say how affixes as separate stress domains should be treated in this respect, but on the basis of the partial derivations on p. 262 of HV we can conclude that extrametricality is at work here. These examples will be discussed in detail, see (30) below. Extrametrical elements are enclosed in angled brackets. The next step in the derivation is the construction of metrical constituents on L0 and L1 by the Main Stress Rule (MSR). (24) shows this process with the word *affí:rmative.*

[47] HV do not give reasons for their decision in the case of *-ative.* Endings are generally treated as separate domains if they are likely to receive stress, like *-ory* in *réspiratòry.*

(24) **The derivation of *affírmative*—cyclic stratum** (based on HV)

						.	*	*	.		.	*	*	.
Accent	*	*	*	.	MSR	(*	*)	(*)	.	MSR	(.	*)	(*)	.
stress-bearers	*	*	*	.	a–f	(*)	(*)	(*)	.	g	*	(*)	(*)	.
	{af	firm}	{at	<ive>}	→	{af	firm}	{at	<ive>}	→	{af	firm}	{at	<ive>}

This is the point in derivation where the two separate stress domains are united as the non-cyclic stratum of derivation starts. The syllables regarded as extrametrical are no longer invisible: the stress rules start to apply to them as well. The first half of the MSR (= Alternator) reapplies to the string, marking potential secondary stressed syllables on L1. Then the Non-Cyclic Main Stress Rule (NMSR) creates L3 (25).

(25) **The derivation of *affírmative*—non-cyclic stratum** (based on HV)

						.	.	*	.	L3
	.	*	*	.	NMSR	(.	*	*)	.	L2
	(*	*)	(*)	.		(*	*)	(*)	.	L1
Alternator	(*)	(*)	(*	*)		(*)	(*)	(*	*)	L0
→	af	firm	at	ive	→	af	firm	at	ive	

At this point the main stress is still on the ending, which would yield the incorrect pattern **affirmátive*. HV generally use the Rhythm Rule (RR) (26) to move the stress to the left.

(26) **Rhythm Rule (RR)**(HV: 235)

> In a constituent C composed of a single word, retract the right boundary of C to a position immediately before the head of C, provided that the head of C is located on the last syllable of C and that it is preceded by a stressed syllable.

However, in this case (26) cannot be applied since the constituent on L2 is not composed of a single word, only *affirmat-*. Since there is no other way of retracting the main stress in HV's system, it seems that *affírmative* cannot be derived with this set of rules. Given that the ending *-ative* would be assigned the same grid in every word, this method cannot account for any instances of *-ative:* no *-ative* word with more than one stressed syllable has primary stress on the ending. With words like *affirmative* we would face the same problems if the ending were not a separate domain, since *-at-* would be the most strongly stressed syllable (as it should be heavy because of the long vowel), but **affirmat* still would not be a word. However, HV do apply the Rhythm Rule (27) and the special *-ative* Rule (28) in their example cited below in (30), and do not comment on the 'illegal' application of RR.

(28) ***-ative* Rule** (HV: 262)[48]

> ... renders the *-at-* non-stress-bearing. Once the line 0 asterisk over *-at-* is deleted, the stress shifts automatically to *-ive.*

The example HV use to demonstrate the work of (28) is *authoritative*. I copied their grids (cf. (29)) because there are serious problems with this derivation.

(30) **HV's derivation—non-cyclic stratum** (p. 262, examples (76, 77))

a)						b)						c)					
					NMSR	.	.	.	*	.		.	*	.		.	L3
.	*	.	*	.		(.	*	.	*	.)	RR	(.	*)	.	*	.	L2
(.	*	.)	(*	.)		(*	*	.	*	.)		(*	*	.)	(*	.)	L1
*	(*	*)	(*	*)	Alt.	(*)	(*	*)	(*	*)		(*)	(*	*)	(*	*)	L0
{au	tho	rit}	{at	ive}	→	{au	tho	rit	at	ive}	→	{au	tho	rit	at	ive}	

d)						
	.	*	.		.	L3
	(.	*)	.	.	*	L2
	(*	*	.)	(.	*)	L1
	(*)	(*	*)	(.	*)	L0
→ *-ative* Rule	{au	tho	rit	at	ive}	

The following problems emerge with the grids in (30). (i) L1 constituents should be head-terminal (+HT) and right-headed, meaning that there must be an asterisk in the rightmost position of a constituent (i.e. (.....*)). No constituent on L1 meets this requirement. (ii) The same applies to L2 constituents, though the two constituents in (30c–d) are well-formed. (iii) As a consequence, the Rhythm Rule (26) 'can' apply here only because the illegal constituent in (30b) on L2 coincides with the word. (iv) The *-ative* Rule (28) is a rather unique rule because it is capable of deleting L0 asterisks, which is unprecedented. What is more, the constituents affected by this move are not deleted, as in the case of conflation (MSRg), but are kept and the stress is moved rightwards onto *-ive*, which is another unique process[49]. Furthermore, a right-headed constituent would be created on L0, which is again impossible, since it contradicts the rule that L0 constituents are left-headed (cf. MSRa in (51) in Section 2.5). For these reasons HV's account seems to be deficient and is in contradiction with their own theory.

HV's theory cannot produce the correct patterns for *-ative* items with this collection of rules, i.e. none of *-ative* words can be derived properly. The major problem is that due to the long vowel in *-ative* the main stress would go on the suffix and there is no mechanism to move it backwards to the stem. Besides, HV's *-ative* shortening is not precise and therefore gives rise to

[48] This rule is postulated but not formalised by HV.

[49] HV assume that *-ive* should be stress bearing, because they have found that flapping does not occur before this ending so extensively (flapping is blocked before a stressed syllable). However, Wells lists all HV's examples with a flap, which does not support this claim.

illegal structures. Even with a more precise formulation, this system would be rather complicated and could hardly account for the variation found in the stress patterns of most *-ative* items.

9.3 Another special rule: Halle (1998)

H98 treats *-ative* words similarly to words ending in *-atory,* which was demonstrated in the Literature review (Section 2.5) and is discussed in Section 10 below: there is a special rule (31) to shorten the vowel of the ending *-ative* in certain circumstances. The shortening depends on what precedes the ending, as in N77 and in B94.

(31) ***-ative* Shortening** (HV: 560)

> In *-at-ive* the suffix *-at-* is shortened if preceded by a heavy syllable or by a sonorant onset (similarly *-ut-ive*).

(31) is rather different from HV's analysis where the *-ative* rule was not constrained by the preceding syllable and stress moved to *-ive.* H98 regards *-ive* unstressable (represented by a dot on the grid), which represents facts better. It is not clear how those cases should be treated that have a short vowel in *-ative* (i.e. (31) should apply), though the ending is not preceded by a sonorant onset or a heavy syllable, as in *quálitative.*

H98 gives one group of such words (p. 559, group (33b)), which is reproduced here as (32). H98 claims that in these words the stem vowel is long, e.g. *deri:v-ative* (i.e. there is a heavy syllable before the ending) and this vowel is shortened by Trochaic Shortening. This rule is not formalised in H98 but in the text he claims it "applies only if the stem vowel is part of a branching foot" (p. 560), i.e. in these words there must be a minimally disyllabic foot. To achieve this, the words in (32) are marked in the lexicon for not being subject to any kind of Edge-marking. (32b) shows that if the word did undergo RLR Edge-marking, a monosyllabic foot would be created, which would block the application of Trochaic Shortening.

(32) ***-ative* words to undergo Trochaic Shortening** (H98: 559)

(32a) without Edge-marking	(32b) with RLR Edge-marking
* (* * .	* (*] * .
derívative	*restórative*
provócative	
declárative	
compárative	

This system looks quite complicated. The key issue is the ordering of the rules (H98: 564–565). The rules that interest us, which are all in the cyclic stratum, are ordered as follows: *-ative* Rule, Edge-marking, MSR. The Rhythm Rule creates a foot on the first level and marks its head on level 2 and then Trochaic Shortening is applied. The derivation of *derívative,* which is the first member of the list in (32a), is given in (33). This word must be an exception to all kinds of Edge-marking.

(33) *derívative*

				-ive unstr.					exception to EM				
											*		
*	*	*	*	*-ative* Rule	*	*	*	.	MSR a, c	*	(*	*	.
de	ri:	va:	tive	→	de	ri:	va	tive	→	de	ri:	va	tive

RR		*		
		(*		
Trochaic Shortening	*	(*	*	.
→	de	ri	va	tive

Before concluding this chapter, let us derive our three example words. The word *investiga:tive* (34) does not undergo the *-ative* Rule, because it is preceded by a light syllable. The post-tonic secondary stress is due to LLR Edge-marking.

(34) *invéstigà:tive*

-ive												RR		*		
unstr.						MSRa-c		*		*				(*		*
	*	*	*	*	.	LLR	*	(*	*	[*	.		*	(*	*	[*	.
→	in	ves	ti	ga:	tive	→	in	ves	ti	ga:	tive	→	in	ves	ti	ga:	tive

The *-ative* Rule can apply in *generative* (35), because a sonorant precedes the ending. Primary stress will be two syllables away from the ending due to RLR Edge-marking.

(35) *génerative*

				-ive unstr.									
									MSR a, c	*			
*	*	*	*	*-ative* Rule	*	*	*	.	RLR	(*	*]	*	.
ge	ne	ra:	tive	→	ge	ne	ra	tive	→	ge	ne	ra	tive

RR	*			
	(*			
	(*	*]	*	.
→	ge	ne	ra	tive

The heavy syllable before the ending triggers the *-ative* Rule in *affi:rmative* (36)*,* but this word retains its long vowel and does not undergo Trochaic Shortening, as opposed to *derivative.*

(36) *affí:rmative*

				-ive unstr.									
									MSR b, c		*		
*	*	*	*	*-ative* Rule	*	*	*	.	RLR	*	(*]	*	.
af	fi:r	ma:	tive	→	af	fi:r	ma	tive	→	af	fi:r	ma:	tive

RR		*		
		(*		
	*	(*]	*	.
→	af	fi:r	ma:	tive

In sum, all three examples could be derived. We must note that whether a certain word undergoes Trochaic Shortening (*derívative* vs. *affí:rmative*) or is an exception to Edge-marking (*derívative* vs. *génerative*) depends on lexical marking, i.e. is idiosyncratic.

H98's special *-ative* Rule cannot handle all cases. There are words in which the ending is short though the preceding vowel is not long underlyingly and the ending is not preceded by a sonorant onset (37). The examples are partly taken from H98's own lists (p. 560), from B94 (p. 299) and some are my own. A complete list of variants belonging to this problematic set is in Appendix 10. The numbers of groups correspond to those in the Appendix. Words in Group 2 were problematic for N77 as well. In Group 5 the primary stress is two syllables away from the ending and the syllable before the ending ends in a short vowel. In Groups 2 and 6 the syllable before the ending is also CV, but *-ative* is preceded by a non-sonorant onset. Main stress is two syllables before the ending in Group 2, while it is right before the ending in Group 6.

(37) ***-ative* /ətɪv/ words that do not conform to rule** (31)

Group 5	Group 2	Group 6
V̌.ative — σ́σative	**V̌.C$_{obstr.}$ative — σ́σative**	**V̌.C$_{obstr.}$ative — σ́ative**
appréciative	*authóritative*	*affrícative*
assóciative	*cógitative*	*interrógative*
inítiative	*commúnicative*	*négative*
pálliative	*delímitative*	*predícative*

Table (38) shows the number of variants in the problem set, based on my corpus (for the whole list of *-ative* items see Appendix 9). H98's system cannot account for more than ten per cent of the variants, though his system contains a lot of lexical marks.

(38) **Number of problematic variants in the corpus**

	Group 5	Group 2	Group 6	Total
Br	6	15	10	31
Am	5	5	4	12
Total	11	20	14	45
Percentage (Total 387)	3	5	3.5	11.5

9.4 Competing constraints: Burzio (1994)

As noted in Section 7 above, *-ative* is comprised of two suffixes: *-ate* and *-ive*. This complex ending is classified as Pre-stressed 1/2 by Fudge (1984: 61–62), which means stress should fall on a heavy syllable before the suffix if there is one, otherwise two syllables away from the suffix. Pre-stressed 1/2 suffixes have the pre-determined structure L)σ, because this ensures that either a (HL) or a (σLL) foot will emerge, yielding the expected pattern.

However, there are two facts to be noted. Beside the expected patterns (i) in some words a light syllable before the suffix is stressed (*pejórative*), (ii) in other cases the ending itself carries secondary stress (*grávità:tive*). These two facts do not follow from the Pre-stressed 1/2 nature of the ending. Regarding *-ative* Pre-stressed 1/2 would suggest the structure a)ti.ve = H)WW. However, with this structure the secondary stress can never fall on *-at-*. For that the structure (HW)W = (a:.ti)ve must be hypothesised. It seems that this duality is the reason why B94 does not assign any pre-determined parsing to this ending.

It must be mentioned that the first occurrence of the ending *-ative* in B94 is rather controversial: words like *ínnovàtive* are first attributed the structure (HW)(σWW): (ín.no)(và:.ti.ve) (p. 16). This is impossible according to the principles outlined above in Section 8.2: post-tonic secondary stress cannot fall on a ternary foot. I shall consider these as misprints for there are very principled accounts on pages 139–139 and 295–301 of B94, which contradict these ill-formed structures. B94 (pp. 295–301) suggests that there are basically three patterns that *-ative* words follow, which were given in (14) above, but are repeated here in (39).

(39) **Patterns followed by *-ative* words** (based on B94: 295–301)

Pattern 1	invéstigà:tive	(σ́σ)(à:.ti)ve	(à:.ti)ve = (HW)W
Pattern 2	génerative	(σ́σa)tive	a)ti.ve = L)WW
Pattern 3	affí:rmative	(σ́a.ti)ve	a.ti)ve = LW)W

The choice between the three patterns in (39) is determined by the stem, especially by the syllable before the ending[50] and by the interplay of two constraints discussed below. There are six basic types of stems:

[50] This is similar to N77's and H98's view that destressing depends on the nature of segments before *-ative*.

(40) **Stems of *-ative* items** (based on B94: 297–298)

Type	Description	Example
1	(σ L)(à:.te) #	*invéstigàte*
2	(σ H)(à:.te) #	*désignàte*
3	bound stem	*pejór-*
4	(H ϕ) #	*affírmϕ*
5	σ́ σ ϕ #	*álterϕ*
6	non-verbal	*authórity*

Verbs ending in *-ate* belong to Types 1 and 2 depending on the weight of the syllable before them. The only exception is *ró:tà:te,* which is a Type 5 stem. Bound stems belong to Type 3. Oxytonic verbs like *explóit* are of Type 4, while verbs which are stressed on the penult like *imágine* are of Type 5. Free but non-verbal stems belong to Type 6. B94 claims that words in a certain stem type will not have variants with all three patterns of (41). Each stem class selects maximally two of the above patterns and the choice between them is idiosyncratic, e.g. Type 1 words can either follow Pattern 1 (*invéstigà:tive*) or Pattern 2 (*génerative*), but Pattern 3 (**ìnvestígative, genérative*).

To understand B94's reasoning (pp. 295–301), let us examine the work of two constraints: Stress Preservation (SP), alias Metrical Consistency, and Generalised Shortening (GS), which shortens a stem vowel in affixed items. B94 says that SP can preserve two stem stresses, e.g. in *grávitàtive* both stem stresses of *grávitàte* are kept. The first of these is the real stem stress (i.e. *grá-*) that is accounted for by SP1. The second stress is that of *-à:te* in *-ative,* accounted for by SP2. GS can shorten the vowel of *-a:tive,* as in *génerative,* i.e. SP2 is violated. Even if the stem does not end in *-ate,* e.g. *prerogative,* which has a bound stem, SP2 is satisfied by the non-existent **prérogà:tive,* while *prerógative* violates it. B94's treatment of GS is ambiguous here. He seems to claim that GS shortens the vowel of *-ative,* which is a violation of SP2, since the ending will not have post-tonic secondary stress. Whether the stem vowel is shortened or not is irrelevant here. About shortening of stem vowels B94 says, in connection with items like *derívative,* that "we thus predict that GS should *(quasi-)systematically* affect the stem vowel in these cases (as in all trisyllabic feet), which seems correct."

B94 makes predictions concerning the choice of stress pattern, which are summarised in table (42). The cells where examples are given show that these are the patterns a word derived from the stem in question would choose according to B94. Shaded cells are predicted to be empty by B94. The reasons for the non-existence of these patterns are explained in detail below the chart. Blank cells stand for variants which are not mentioned. The examples are generally mine.

(42) **Burzio's predictions on the stress of *-ative*** (based on B94: 297–298)

Type	**Stem**	**Pattern 1** (à:.ti)ve	**Pattern 2** a)ti.ve	**Pattern 3** a.ti)ve
1	(σ L)(à:.te)#	in(vés.ti)(gà:.ti)ve	(gé.ne.ra)ti.ve	<u>*SP1, *SP2</u>
2	(σ H)(à:.te)#	(dé.sig)(nà:.ti)ve	*(σHσ)	al(té:r.na.ti)ve
3	bound stem			pe(jó.ra.ti)ve
4	(H ϕ) #	<u>*SP1, *GS</u>		af(fí:r.ma.ti)ve
5	σ σ ϕ #	(ál.te)(rà:.ti)ve	(ál.te.ra)ti.ve	
6	non-verbal			

B94 (p. 297) claims that in words belonging to Type 1 Pattern 3 is unattested, because the first stem stress (*génerate*) is not preserved and as GS is satisfied, SP2 is violated.. Secondly, if the ending is preceded by a H syllable, the second pattern is excluded because a ternary foot with a heavy medial is not allowed, though both SP1 and GS would be satisfied. The third negative prediction B94 makes is that oxytonic stems (Type 4) will reject Pattern 1 when *-ative* attaches, because this variant (**áffirmàtive*) would violate both *SP1 and *GS. Table (42) further suggests that a binary foot is preferred before a weak foot (Pattern 1), which is the Strong Retraction Condition. Furthermore, if the ending is unstressed (i.e. has a short vowel), a ternary pattern is expected.

The chart in (43) shows the interplay of SP1, SP2 and GS, which work in the following manner: acceptable patterns are those which satisfy two of the three constraints (43a–b). In some cases, however, the satisfaction of GS alone may produce a satisfactory result (43d), as in *demónstrative* = de(mónstrati)ve. Therefore, GS is the strongest constraint.

(43) **The interplay of SP and GS** (based on B94: 299–300)

	SP1	**SP2**	**GS**	**Result**	**Examples**	**Stem**
(43a)	✓	✓	*	✓	in(vés.ti)(gà:.ti)ve	*invéstigà:te*
(43b)	✓	*	✓	✓	(gé.ne.ra)ti.ve	*generà:te*
(43c)	*	✓	*	*	*(áf.fir)(mà:.ti)ve	*affí:rm*
(43d)	*	*	✓	*/✓	*ge(né.ra.ti)ve de(món.stra..ti)ve	*génerà:te* *démonstrà:te*

In B94's interpretation SP2 and GS both refer to the first syllable of *-ative* even if *-ate* is not part of the base. This means that in B94's interpretation in every case when *-ative* is pronounced /eɪtɪv/, SP2 is satisfied, GS is violated. Accordingly, if *-ative* is pronounced /ətɪv/, SP2 is violated, GS is satisfied. This is illustrated in (44), the examples are mine.

(44) **The work of SP2 and GS according to B94** (based on B94: 299–300)

(44a) (**SP2**, *GS),	**Stem**	***-ative***	**Pattern—Type**
	inté:rpret	*inté:rpretà:tive*	1 — 5
	quálity	*quálità:tive*	1 — 6
(44b) (*SP2, **GS**)	*deté:rmine*	*deté:rminative*	2 — 5
	au:thórity	*au:thóritative*	2 — 6
	commú:te	*commú:tative*	3 — 4
	accú:se	*accú:sative*	3 — 4

As SP2 and GS are calculable from each other (if one is satisfied, the other is not), it would be enough to have only one of these. For example if SP2 is eliminated, chart (43) becomes (45). If we assume (45), the well-formed patterns would be those that satisfy SP1 (45a–b). Sometimes the satisfaction of GS alone would give good results (45d).

(45) **Only two constraints**

	SP1	**GS**	**Result**	**Examples**	**Stem**
(45a)	✓	*	✓	in(vés.ti)(gà:.ti)ve	*invéstigà:te*
(45b)	✓	✓	✓	(gé.ne.ra)ti.ve	*génerà:te*
(45c)	*	*	*	*(áf.fir)(mà:.ti)ve	*affí:rm*
(45d)	*	✓	*/✓	*ge(né.ra.ti)ve de(món.stra..ti)ve	*génerà:te* *démonstrà:te*

The analysis of *-ative* words (which is discussed in detail below) will show that though B94's predictions are generally correct, there are words which do not conform to B94's assumptions: viz. words for the shaded cells of (42) that B94 predicts to be empty.

To account for the data better, I reinterpreted the meaning of constraints SP1, SP2 and GS. As (45) showed, in B94's constraints one piece of information (i.e. whether the ending is *-ative* or *-à:tive*) is encoded twice, by SP2 and GS. In the analyses below I will make use of all the three constraints, which will be reinterpreted as follows (46).

(46) **The reinterpretation of SP1, SP2 and GS**

(46a) SP1 means the preservation of the first stem stress (= B94's SP1)
(46b) SP2 means the preservation of the second stem stress
(46c) GS means shortening of a stem vowel

As now SP2 and GS do not only refer to the ending *-ative,* SP2 will be inapplicable in words that have only one stem stress, e.g. *fíx* → *fíxative.* GS will be satisfied if a stem vowel shortens, which results in *-ative* if the stem ends in *-a:te,* e.g. *cóntemplà:te* → *contémplative,* but GS is also satisfied by *connó:te* → *cónnotà:tive.* I think this interpretation should reflect facts

better for the following reasons. Metrical consistency of the suffix is already encoded into the pre-determined parsings (ati)ve ~ ati)ve ~ a)tive. If one appears in the word, Suffix Consistency is satisfied, i.e. no separate SP2 is needed. Instead, if SP2 refers to the second stem stress, we have a device to show the difference between words that are totally preserving (e.g. *invéstigà:tive, rèpreséntative*) and those that only preserve one stem stress (e.g. *génerative*). While *-ive* shortens *-at* in *-ative,* the whole ending *-ative* may shorten a stem vowel, which is not necessarily in a ternary foot (e.g. *cònnotá:tive*), as B94's above cited remark would suggest. Furthermore, none of B94's constraints ensures explicitly that vowels would shorten in a ternary foot. I will come back to this issue in connection with words belonging to Type 4, some of which display the variation *explórative* ~ *expló:rative.* Another reason for this interpretation of the constraints is that Burzio himself interprets these constraints for stems in some other examples, e.g. in *desí:rous* (stem: *desí:re*) GS is violated, while in *dèfamá:tion* (stem: *defá:me*) GS is satisfied (B94: 324). This can only refer to the stem vowel. As for SP, in *prò:dúction* SP is satisfied, while in *prodúction* (stem: *próduct*) it is not (B94: 329). This again refers to the stem.

The work of these modified constraints is illustrated in (47) below. In the examples and charts below the name of the satisfied constraints will be given in bold face, the name of violated constraints will be marked with an asterisk and will be underlined. If a constraint is inapplicable, a hyphen is put after the name of the constraint.

(47) **The interplay of the reinterpreted SP1, SP2 and GS**

(47a)	(grá.vi)(tà:.te)	→	(grá.vi)(tà:.ti)ve	**SP1, SP2,** GS*
(47b)	cre(á:.te)	→	cre(á:.ti)ve	**SP1,** SP2-, GS*
(47c)	(dé.co)(rà:.te)	→	(dé.co.ra)ti.ve	**SP1**, SP2*, **GS**
(47d)	con(nó:.te)	→	(cón.no)(tà:.ti)ve	SP1*, SP2-, **GS**
(47e)	(cón.tem)(plà:.te)	→	con(tém.pla.ti)ve	SP1*, SP2*, **GS**

In (47a) both the primary and the secondary stress are preserved, while in (47b) there is only one stress in the stem, and it is kept. As the words in (47c–e) show, in all instances the long vowel is shortened (in fact, reduced) after affixation. In my analysis those words are predicted to exist in which either total stress preservation is satisfied (i.e. both SP1 and SP2, as in (47a), or SP1 alone if SP2 is inapplicable (47b)), or those in which GS is satisfied (47c–e). If two constraints satisfied at the same time (47a, c), we can expect a larger number of variants following that pattern.

9.4.1 The analysis of *-ative* items

This section shows what the data suggest if checked against B94's expectations. The 135 words (with 387 variants) collected (see Appendix 9) have been analysed following B94's principles but with the modified constraints of (46). Very few of these variants are actually given in B94, the overwhelming majority of the analyses are my own. After establishing parsings and finding roots, I grouped the words in a similar fashion to (42), so that each section in my charts would correspond to one cell of (42), but containing all the relevant examples.

In all of the charts below the numbers in the first column indicate the type of the stem (corresponding to (42) above) and a typical parsed stem. The shaded cells are the ones that B94 (pp. 297–298) predicted to be empty (i.e. the shaded cells of (42)). Column 2 shows the relevant constraints, i.e. which constraints are satisfied, violated, or inapplicable. In the case of bound stems (Type 3) we cannot determine which constraints are relevant, since there is no free stem on which the stem stress pattern could be seen or relative to which the stem vowel could shorten. All British and American examples are given in columns 3 and 4 respectively. The numbers before the variants in these columns show which variant of the word it is, the numbers being the same as in Appendix 9: "2.accú:mulà:tive" means that the variant in question is the second most frequent pronunciation of the word in Wells. $ marks words that have two different pronunciations with the same stress pattern. These usually differ in one having a reduced vowel where the other has a short lax monophthong (e.g. *cóntemplàtive* ˈkɒntəmpleɪtɪv, ˈkɒntempleɪtɪv). For the purposes of the present discussion these are the same: *-tem-* yields a H_n syllable in both cases. A hyphen indicates syncope, underlined vowels are full, long vowels are marked by a colon (:).

Type 4 of B94 had to be split because the variants belonging to this Type do not behave in a uniform manner. They satisfy different combinations of constraints. For example, *accú:sative* and *áblative* both have Type 4 stems (*accú:se, ablá:te*). In *accú:sative* the only stem stress is preserved (SP1) and the stem vowel does not shorten (GS*). In *áblative* the stem stress is shifted (SP1*) and the vowel shortens (GS). The following subgroups have been established (48).

(48) **Subtypes in Type 4**

- 4a verbs with a long stressed vowel, but not ending in *-ate,* e.g. *provó:ke*
- 4b verbs ending in *-á:te,* e.g. *ablá:te*
- 4c verbs with a short stressed vowel, e.g. *consúlt*
- 4d verb with a short stressed vowel and two stem stresses, e.g. *rèpresént*

The classification of stems is in Appendix 8. I tried to find stems which are existing words related to the item in question, to be able to see the stress pattern of the stem. The sections below discuss the results of the analysis.

9.4.1.1 Patterns

Words following Pattern 1 have two binary feet, obeying the Strong Retraction Condition, the second of which is weak: (H σ)(HW) = (H σ)(à:.ti)ve. B94 claims that we shall find examples in Types 1, 2 and 5, but not in 4 (cf. (42)), i.e. the rows of Type 4 are shaded. (49) is the complete list of words following Pattern 1.

(49) **Pattern 1: (a:.ti)ve[51] = ac(cú:.mu)(là:.ti)ve**

Type	Constraints	British	American
1 (σ́L)(à:.te) = ac(cú:.mu)(là:.te)	**SP1 SP2** GS*	2.accú:mulà:tive, 2.áfricà:tive, 2.agglú:tinà:tive, 2.allíterà:tive, 1.amé:liorà:tive[52], 2.appré:cià:tive, 2.assímilà:tive, 2.assó:cià:tive, 2.cálculà:tive, 2.cógità:tive, 2.colláborà:tive, 2.commémorà:tive, 2.commíserà:tive, 2.commú:nicà:tive, 2.cópulà:tive, 2.corróborà:tive, 2.cú:mulà:tive, 3.degénerà:tive, 3.delímità:tive, 2.discrímінà:tive, 2.éducà:tive, 1.émanà:tive, 2.féderà:tive, 1.grávità:tive, 2.ímità:tive, 2.ìncommú:nicà:tive, 2.inóperà:tive, 2.invéstigà:tive, 2.íterà:tive, 2.manípulà:tive, 2.médità:tive, 2.óperà:tive, 1.óxidà:tive, 2.pénetrà:tive, 2.:pò:stóperà:tive, 1.própagà:tive, 3.recú:perà:tive, 3.regénerà:tive, 3.remú:nerà:tive, 2.rú:minà:tive, 2.spéculà:tive, 2.stímulà:tive, 2.úlcerà:tive, 2.ùncommú:nicà:tive, 2.végetà:tive, 3.vi:tú:perà:tive	3.accú:mulà:tive, 3.agglú:tinà:tive, 4.allíterà:tive, 1.amé:liorà:tive, 6.appré:cià:tive, 3.assímilà:tive, 3.assó:cià:tive, 3.cálculà:tive, 3.có:gità:tive, 3.colláborà:tive, 4.commémorà:tive, 3.commíserà:tive, 3.commú:nicà:tive, 3.co:ó:perà:tive, 4.cópulà:tive, 3.corró:borà:tive, 3.décorà:tive, 5.degénerà:tive, 3.delíberà:tive, 4.delímità:tive, 3. discrímінà:tive, 3.éducà:tive, 3.émanà:tive, 3.féderà:tive, 3.génerà:tive, 1.grávità:tive, 3.ímità:tive, 3.ìncommú:nicà:tive, 4.inó:perà:tive, 3.invéstigà:tive, 3.íterà:tive, 3.manípulà:tive, 3.médità:tive, 4.ó:perà:tive, 2.ó:xidà:tive, 2.pállià:tive, 3.pénetrà:tive, 3.prédicà:tive, 1.pró:pagà:tive, 5.regénerà:tive, 5.remú:nerà:tive, 3.séparà:tive, 3.spéculà:tive, 3.stímulà:tive, 3.úlcerà:tive, 3.ùncommú:nicà:tive, 3.végetà:tive, 5.vi:tú:perà:tive
2 (σ́H)(à:.te) = ad(mí.nis)(trà:.te)	**SP1 SP2** GS*	3.admínistrà:tive, 3.cóntemplà:tive $, 2.íllustrà:tive, 1.ínno:và:tive, 1.íntegrà:tive, 2.législà:tive	4.admínistrà:tive, 7.cóntemplà:tive $, 5.íllustrà:tive, 4.ínnovà:tive, 1.íntegrà:tive, 3.législà:tive
3 bound	—	2.ho:r(tá:.ti)ve,	3.cá:rminà:tive
4 (H́ϕ) a) = con(nó:.te)	SP1* SP2- **GS**	2.cómmutà:tive, 1.cónnotà:tive, 3.dénotà:tive	3.có:mmutà:tive, 5.có:nnotà:tive, 4.dénotà:tive, 4.réstorà:tive
= abl(á:te) b)	**SP1** SP2- GS*	1.ab(lá:.ti)ve$_2$, 1.cre(á:.ti)ve, 2.(ϕ.crè:)(á:.ti)ve, 2.e(lá:.ti)ve $, 1.ro:(tá:.ti)ve	1.ab(lá:.ti)ve$_2$, 1.cre(á:.ti)ve
5 (σ́ σ ϕ) = in(té:r.pre.tϕ)	**SP1** SP2- GS*	2.inté:rpretà:tive	3.deté:rminà:tive, 3.imáginà:tive, 3.inté:rpretà:tive
6 Non-verbal	**SP1** SP2- GS */-	2.au:thórità:tive, 2.quálità:tive, 2.quántità:tive	3.au:thórità:tive, 3.quá:lità:tive, 3.quá:ntità:tive

SP2 satisfied constraint, SP2- inapplicable constraint, SP2* violated constraint

[51] Except for words in groups 3 and 4b, where the pattern is (á:.te), with the main stress on *-ate.*

[52] If this word is parsed with a ternary foot before the final weak one, it violates the Strong Retraction Condition. If /lɪə/ is one syllable, no such problem occurs. But in that case the word belongs to Type 2, with a H syllable before the ending.

As expected, we find numerous examples in the first two cases (Types 1 and 2), where both the stress of the original stem and the stress on the suffix *-ate* are preserved, but the long vowel of the stem does not shorten. Due to the relative rarity of *-ative* items with bound stems, we do not expect many examples in row 3. This expectation is borne out: there are only two variants in this row.

The row of Type 4, that of oxytonic verbs, is expected to be empty, because in B94's interpretation both SP1 and GS are violated, because the first stem stress is shifted and the ending appears with a long vowel, which according to B94 means that SP2 is satisfied, GS is violated. However, we find examples there, which form two subgroups.

In group 4a stress is shifted, i.e. SP1 is not satisfied. Among Type 4 stems there is only one with two stem stresses, namely *rèpresént,* i.e. with all other stems SP2 is inapplicable in our interpretation. The vowels which bear the primary stress in the stem are shortened, thus GS is satisfied in our analysis, which—as it is the strongest constraint—is enough to mark the words well-formed. Group 4b contains words whose stem is an oxytonic *-ate* verb, e.g. *ablá:te,* and the corresponding *-ative* word is *ablá:tive.* Groups 4b and 3 are exceptional in that the first syllable of the ending receives primary stress rather than secondary, because there is no other foot in the word. The original stem stress is preserved, but the length of the vowel is retained. Therefore, in our interpretation SP1 is satisfied, SP2 is not applicable as there is only one stem stress, and GS is violated, because the long stem vowel of *-a:te* does not shorten. This means that total stress preservation wins over GS (cf. (47b) above).

In Type 5 (*deté:rmine* → *deté:rminative*) the situation is similar to Type 4b: the preservation of the only stem stress wins over the violation of GS. As these words are longer than Type 4 words, in the derived items there are two feet, out of which the second one is weak, i.e. *-à:tive* is secondary stressed. Type 6 is again similar (SP1 satisfied, SP2 inapplicable, GS violated), though in two of the three stems relevant here GS is simply inapplicable (i.e. *quálity* and *quántity* have no long vowels), therefore the only constraint to be satisfied here is SP1.

In sum, all of Pattern 1 variants have been found regular in our interpretation of SP1, SP2 and GS, while B94's system cannot account for variants in Type 4. Most of the examples appeared in those rows where two constraints were satisfied (Types 1 and 2).

The second pattern (50) is characterised by a short vowel in the ending (thus where relevant, GS will be satisfied) and a ternary foot, plus two consecutive extrametrical syllables: *ti.ve*: (σ L a)ti.ve = (σ L σ)WW. Thus main stress is on the fourth (overt) syllable from the end. B94 predicts that there will be no examples in Type 2 (where the ending is preceded by a H syllable) due to the ill-formedness of *(σHσ).

(50) **Pattern 2: a)ti.ve = ac(cú:.mu.la)ti.ve ~ ac(cú:.sa)ti.ve** — first part

Type	Constraints	British	American
1 (σ́L)(à:.te) = ac(cú:.mu)(là:.te)	**SP1** SP2* **GS**	1.accú:mulative, 1.agglú:tinative, 1.allíterative, 1.appré:ciative, 3.appré:c-ative, 1.assímilative, 1.assó:ciative, 1.cálculative, 1.cógitative, 1.colláborative, 1.commémorative, 1.commíserative, 1.commú:nicative, 1.co:óperative, 1.cópulative, 1.corróborative, 1.cú:mulative, 1.décorative, 1.degénerative $, 1.delíberative $, 1.delímitative $, 1.discríminative, 1.desíderative, 1.éducative, 2.émanative, 1.féderative, 1.génerative, 1.ímitative, 1.ìncommú:nicative, 1.inít-ative, 2.inítiative, 1.inóperative, 1.invéstigative, 1.íterative, 1.manípulative, 1.méditative, 1.nóminative, 1.óperative, 1.pálliative, 1.pénetrative, 1.pò:stóperative, 1.recú:perative $, 1.regénerative $, 1.remú:nerative $, 1.rú:minative, 1.séparative, 1.spéculative, 1.stímulative, 1.últerative, 1.ùncommú:nicative, 1.végetative, 1.vi:tú:perative, 2.vitú:perative	4.accú:mulative, 4.agglú:tinative, 3.allíterative, 4.appré:c-ative, 5.appréc-ative, 4.assímilative, 4.assó:ciative, 4.colláborative, 3.commémorative, 4.commú:nicative, 2.co:ó:perative, 3.cópulative, 4.corró:borative, 1.cú:mulative, 2.décorative, 4.degénerative, 4.delíberative, 4.discríminative, 3.desíderative, 4.féderative, 2.génerative, 4.ìncommú:nicative, 1.inít-ative, 3.inó:perative, 4.íterative, 4.manípulative, 2.nó:minative, 3.ó:perative, 3.pálliative, 3.pò:stó:perative, 1.recú:perative, 4.regénerative, 4.remú:nerative, 1.rú:minative, 2.séparative, 4.spéculative, 3.ùncommú:nicà:tive, 4.vi:tú:perative
2 (σ́H)(à:.te) = ad(mí.nis)(trà:.te)	**SP1** SP2* **GS**	1.admínistrative $, 5.cóntemplative, 1.íllustrative, 2.ínno(:)vative, 1.législative	5.admínistrative, 4.législative
3 bound		2.pé:jorative	—

SP2 satisfied constraint, SP2- inapplicable constraint, SP2* violated constraint

Table (50) is continued next page.

(50) **Pattern 2: a)ti.ve = ac(cú:.mu.la)ti.ve ~ ac(cú:.sa)ti.ve** — continued

Type	**Constraints**	**British**	**American**
4 (Ḧφ) a) = ac(cú:se)	**SP1** SP2- GS*	1.accú:sative, 1.affí:rmative, 1.cá:usative, 1.commú:tative, 3.connó:tative $, 1.consé:rvative $, 1.cú:rative, 2.dè:nó:tative, 1.dú:rative, 1.é:lative, 1.exhó:rtative, 1.explóitative, 2.exploó:rative, 1.fó:rmative, 1.infó:rmative, 1.presé:rvative $, 1.pró:bative, 1.pú:rgative, 1.refó:rmative $, 2.re:stó:rative $, 1.tá:lkative	1.accú:sative, 1.affí:rmative, 1.cá:usative, 4.commú:tative, 6.connó:tative, 1.consé:rvative, 1.cú:rative, 5.denó:tative, 2.evó:cative, 1.exhó:rtative, 1.explóitative, 3. explό:rative, 1.fó:rmative, 1.infó:rmative, 3.ó:ptative, 1.presé:rvative, 1.pró:bative, 1.provó:cative, 1.pú:rgative, 1.refó:rmative, 1.restó:rative, 1.tá:lkative
= do:ná:te b)	SP1* SP2- **GS**	1.dó:native 2.ró:tative[53],	3.dó:native[54], 1.é:lative, 2.ló:cative
5 (σ́σφ) = de(té:r.mi.ne)	**SP1** SP2- GS*/-	1.deté:rminative $, 1.fígurative, 1.imáginative, 1.inté:rpretative	4.deté:rminative, 1.fígurative, 1.imáginative, 1.inté:rpretative
6 Non-verbal	**SP1** SP2- GS*/-	1.au:thóritative, 1.quálitative, 1.quántitative	—

SP2 satisfied constraint, SP2- inapplicable constraint, SP2* violated constraint

Most examples appear in Type 1, where the first stem stress is preserved and the long vowel shortens, i.e. SP1 and GS are both satisfied. B94 claims there should not be examples in Type 2, because though two constraints (SP1, GS) are satisfied, the ternary foot will have a heavy medial, as in ad(mí.nis.tra)ti.ve, violating Metrical Well-formedness. However, in 6 of the 7 variants found in this group the ternary foot is of the form $(\sigma H_n \sigma)$. As noted before, H_n syllables count as light in unstressed position, i.e. here. The existence of the forms listed in Type 2 supports that this foot is well-formed (though may not be the ideal ternary foot). On this issue B94's remarks on p. 298 are not clear. He claims that H_n syllables should behave as light to satisfy stress preservation if the Word-condition holds (cf. (55) in Section 5.2.2.1 above), i.e. if the stem of the word is a free form and the suffix belongs to the special class of affixes that only attach to words. It seems to me that *-ative* should not be a suffix like that, given the existence of Type 3 words with a bound stem, and the shortening effect of the ending in words like *cónnotà:tive*. Therefore, in *-ative* words H_n cannot behave as light. However, on the same page B94 says that "cases like *(législa)tive, ad(mínistra)tive* [...] thus represent the expected pattern." I maintain my assumption that H_n may count as light in unstressed position, irrespective of the Word-condition.

[53] Different patterns of stem in AmE and BrE: BrE ro:tá:te (4b), AmE ró:tà:te (5)

[54] The stem of this word has two different stress patterns in AmE: dó:na:te and do:ná:te. This variant is derived from stem$_2$., the other variant belongs to Type 5, cf. (51) below.

The variant *ínno:vative* is a real problem, because the second syllable is heavy due to a long vowel. The only solution I can propose here is that exceptionally this word has three extrametrical syllables, i.e. it is parsed as (ín.no:)va.ti.ve. On the possible weakness of syllables headed by schwa (*-va-* in this case) see Section 10 below. The only variant in Type 3 has a well-formed foot.

Type 4 stems have a (Hø) word finally, and if *-ative* is added to it, the derived word can have two well-formed parsings: either a binary foot is constructed, as in ***accú:sative*** = ac(cú:sa)ti.ve = σ(HL)WW, *compárative* = com(pá.ra)ti.ve = σ(LL)WW, i.e. Pattern 2, or a ternary foot is built, as in ***accú:sative*** = ac(cú:sa.ti)ve = σ(HLW)W, *compárative* = com(pá.ra.ti)ve = σ(LLW)W, i.e. Pattern 3. All feet are well-formed and their head is on the same syllable. If we examine the weight of these feet (B94: 147–155), it turns out that the parsing (HL)W is better than (HLW), while (LLW) is better than (LL)W, i.e. if the stressed syllable is long, a binary foot should be built, if it is short, a ternary one. This is in line with B94's claim on p. 299. that vowels shorten in trisyllabic feet.

As a result, I regard Type 4 words with a long vowel (e.g. *accú:sative, commú:tative*) as following Pattern 2, and the ones with a short vowel (e.g. *compárative, explórative*) as following Pattern 3. Since only Type 4a and Type 4b stems have a long vowel, we only find examples from these two groups here. In Type 4a, and in Types 5 and 6 as well, the phenomenon noted in connection with Pattern 1 occurs again: the satisfaction of SP1 and no other constraint is enough for a well-formed output, because SP2 is inapplicable here. In Type 4b, however, the long stem vowel of *-á:te* shortens, i.e. GS is satisfied, but SP1 is not, as stress moves to the left. The first stem vowel does not shorten (e.g. *ro:tá:te* → *ró:tative*), and in *é:lative* (*elá:te*) it lengthens. This lengthening may be due to the fact that (Hσ) is preferred to (Lσ).

Our interpretation of the constraints accounted for all variants. The existence of forms in Type 2 has been explained by B94's own assumption, namely that an H_n syllable may count as light in unstressed position. There was one variant following this pattern that violated Metrical well-formedness: *ínno:vative,* which may have three extrametrical syllables exceptionally.

In the third group of *-ative* items (51) the ending is again reduced and a ternary foot is constructed. There is only one extrametrical syllable: main stress falls on the antepenult (not counting the syllable with the mute *e*) (σa.ti)ve = (σLσ)W. B94 predicts that there should be no words in Type 1 here, because both SP1 and SP2 are violated. The situation is the same in Type 2, but here the satisfaction of GS is enough. B94 does not give reasons why Type 1 should not exist, while Type 2 should.

(51) **Pattern 3: (σ́ a.ti)ve = af(frí.ca.ti)ve**

Type	Constraints	British	American
1 (σ́L)(à:.te) = (áf.fri)(cà:.te)	SP1* SP2* **GS**	1.affrícative, 1.corrélative $, 1.indícative, 1.ìnterrógative, 1.predícative $	1.affrícative, 1.corrélative, 1.indícative, 3.innó:vative, 2.ìnterró:gative
2 (σ́H)(à:.te) = (ál.ter)(nà:.te)	SP1* SP2* **GS**	1.alté:rnative, 1.contémplative $, 1.demónstrative, 1.fíxative, 3.illú:strative, 2.re:mónstrative, 1.ùndemónstrative $	1.alté:rnative, 6.contémplative,, 2.demó:nstrative, 1.fíxative, 4.illú:strative, 3.remó:nstrative, 3.ùndemó:nstrative,
3 bound		1.frícative, 1.hó:rtative, 1.impérative, 1.lú:crative, 1.pejórative, 1.prerógative $, 1.pú:tative, 1.téntative, 1.vócative	1.frícative, 1.hó:rtative, 1.impérative, 1.lú:crative, 3.pejó:rative, 3.preró:gative, 1.pú:tative, 1.téntative, 2.vó:cative
4 (H́ϕ) a) = com(pá:.re)	**SP1** SP2- **GS**	1.compárative $, 1.declárative $, 1.derívative $, 1.evócative, 1.prepárative $, 1.provócative $, 1.repárative $	1.compárative, 1.declárative, 1.derívative, 2.dúrative, 1.prepárative, 1.repárative
= ab(lá:.te) b)	SP1* SP2- **GS**	1.áblative$_1$, 2.dónative, 1.lócative, 1.nárrative, 1.négative, 1.rélative, 1.sédative	1.áblative$_1$, 1.nárrative, 1.négative, 1.rélative, 1.sédative
= con(súl.tø) c)	**SP1** SP2- GS-	1.consúltative $, 1.explórative, 1.fíxative, 1.láxative, 1.óptative, 1.prevéntative $	3.consúltative, 1.fíxative, 1.láxative, 1.prevéntative
= (rè.pre)(sén.tø) d)	**SP1 SP2**[55] GS-	1.rèpreséntative	1.rèpreséntative
5 (σ́σ ϕ) = (dó:.na:)te	**SP1** SP2**- GS**	—	3.dó:native, 3.ró:tative
6 Non-verbal	**SP1 SP2/**- GS*/-	1.àrguméntative, 1.cálmative, 2.cá:lmative, 1.nó:rmative	1.àrguméntative, 1.cálmative, 1.nó:rmative

SP2 satisfied constraint, SP2- inapplicable constraint, SP2* violated constraint

There are some examples in Type 1, which preserve neither stress but the vowel is shortened in them. This is the case when the satisfaction of GS alone is enough. Words in Type 2 display the same behaviour. I see no reason why Type 1 and Type 2 words following Pattern 3 should be different. Compared to Patterns 1 and 2, there are far fewer examples in these two rows than in the previous cases. This is probably due to the fact that these variants violate two of the three constraints. Variants in Type 3 have well-formed feet and most of them follow this pattern.

As noted in connection with Type 4 words belonging to Pattern 2, in Pattern 3 we find those Type 4 words that have a short vowel, i.e. GS is either violated or is inapplicable if the stem lacks long vowels. We find words from all the four subtypes of Type 4 here. In groups 4a

[55] In this word both stem stresses are preserved, but here the order is different from all other cases, since the stem of this word has pre-tonic secondary stress: *rèpresént*. This pattern is totally preserved by the *-ative* item.

and 4d two constraints are satisfied. In 4b, the *-á:te* of the stem shortens and if there is another long vowel of the stem, that is shortened as well (e.g. *do:ná:te* → *dónative*), probably because LLL is the ideal ternary foot. Recall that words like these in Type 2 retained their long vowel to build an ideal binary foot (Hσ). For words in 4c it is only SP1 that is applicable, as the only stressed stem vowel is short, and there is no other long vowel in the stem. Naturally, the satisfaction of this yields a correct pattern.

In Type 5 two constraints are satisfied. In 6 all stem stresses are satisfied and GS is either inapplicable or violated, i.e. the full preservation of stresses wins over GS. The variants of the last pattern have been found to be regular according to our constraints, similarly to previous cases.

9.4.1.2 Problematic cases

There are some, though few, cases not accounted for in the above three sections. These are listed in (52).

(52) **Problematic variants**

	Variants	Pattern	Type	Problem
(52a)	2.(cón.no:)(tà:.ti)ve	1	4	SP1*, SP2-, GS*
	4.(cón.sul)(tà:.ti)ve	1	4	SP1*, SP2-, GS-
(52b)	2.op(tá.ti.ve)	—	4	á.ti.ve
(52c)	1.(mùl.ti)(plí.ca.ti)ve, 2.(múl.ti.pli)(cà:.ti)ve || 3. (mùl.ti)(plí.ca.ti)ve 4. (múl.ti.pli)(cà:.ti)ve	3~1	—	unique stem pattern
(52d)	2. (ín.no:.va)ti.ve	2	2	*(σHσ)

In the two words in (52a) violate all the applicable constraints, but well-formed feet can be assigned to the strings. This means that these patterns are predicted to be acceptable but should not be very frequent (which is true, neither item is the most frequent variant), because Metrical Well-formedness constraints are satisfied but others are not. In B94's interpretation these would also be problematic, since only SP2 is satisfied by them.

In (52b) primary stress falls on the first syllable of the ending, which has a short vowel here. This pattern is not expected, because the ending with a short vowel should be parsed either as a)tive or as ati)ve and in the latter case we expect a ternary foot rather than a binary one, as in af(frí.ca.ti)ve. Therefore we violate suffix consistency, which is, I believe, not a very strong violation, since the suffix does not have a constant form like *-ic*. The question is what foot is built over *-átive*, which is LWW. We have two options: (LW)W or (LWW). Both yield the expected pattern and both are problematic, from which it follows that these variants should be rare. (Lσ) in the sequence (LW)W of op(tá.ti)ve, though it is the only foot in the word and as such is acceptable, is rather light as a foot, due to the weak syllable. Feet that are too light are not acceptable in general (B94: 147–155). An advantage of this analysis is that it is "faithful" to the parsing ati)ve, thus being metrically consistent. As for the parsing (LWW) as in op(tá.ti.ve), B94 does not mention this foot-type and this parsing is not metrically consistent with any of the pre-determined parsings of *-ative*. An advantage of this analysis is that ternary feet in rightmost position always bear primary stress, while (σW) feet in this position are generally secondary stressed. Due to the lightness of (LW) foot, I consider the second analysis better.

The word in (52c), *multiplicative,* is only problematic because the stem, *multiply*, cannot be put into the stem types observed above in (47). This word must be analysed as (múl.ti.ply:) (c.f. B94: 51, 232), and thus has the structure (σ́σσ), which is unique among the items collected. The two stress patterns followed by the derived word *multiplicative* correspond to Pattern 1: (múl.ti.pli)(cà:.ti)ve, and Pattern 3: (mùl.ti)(plí.ca.ti)ve. In both cases the stem stress is preserved (SP1) and the final vowel of the stem is shortened (GS), which means that the two constraints are satisfied.

The word in (53d), *ínno:vative*, was the only one out of the 387 variants that had an ill-formed foot, as discussed above. I suggested that exceptionally there is a binary foot and three syllables remain unparsed at the end of the word, i.e. it can be parsed as (ín.no:)va.ti.ve.

Finally, there is one *-ative* word which is rather problematic. The word *rècitatíve* is derived from *recite*, but it is a noun, so the suffix should be different from the *-ative* we are discussing. This is also shown by the pronunciation of *-ative* as /əˈtiːv/. As a result, this word has been dropped from the corpus. It is worth mentioning that the main problem posed by this item is that a weak syllable gets the primary stress (rè.ci.ta)(tí:.ve) = (LLL)(HW), when there is another candidate, a non-weak foot, for it. Therefore *rècitatíve* is like *kàngaróo* (cf. Section 6.2 above).

9.5 Summary

In the above sections we have seen that B94's theory can account for the stress patterns of most *-ative* items. The ending has the pre-determined structures a)tive ~ ati)ve ~(a:ti)ve, which gives rise to three basic patterns. Therefore, B94's system allows for variation, but it cannot predict which possible form the speakers will choose. The choice is made with the help of three competing constraints: stress preservation (SP1 and SP2) and shortening of the vowel in the context of an affix (GS).

The chart below (54) shows the distribution of variants among patterns. The rows correspond to Types. The "Problem" column refers to 2.op(tá.ti.ve) (cf. (52b) above), because the ending *-ative* has a unique parsing (viz. (a.ti.ve)) in it. The numbers in bold deserve attention: these are the cells that are worth comparing from the point of view of British vs. American variants, because there is some difference between the two dialects. The cells that are shaded are the ones that B94 predicted to be empty (cf. (42) above).

(54) **The distribution of variants**

Pattern		**1 (à:.ti)ve**		**2 a)ti.ve**		**3 a.ti)ve**		**Problem** [56]		**Total**			
Type	Stem	Br	Am	Br	Am	Br	Am	Br	Am	Br	Am	All	
1	(σ L)(à:.te)#	47	50	53	38	5	5	—	—	105	93		198
2	(σ H)(à:.te)#	6	5	5	2	7	7	—	—	18	14		32
3	bound stem	1	1	2	—	9	10	—	—	12	11		23
4a	(Hø)# *provó:ke*	3+1*	4	21	22	6	5	—	—	31	31	62	
b	*ablá:te*	5	2	2	3	7	5	—	—	14	10	24	100
c	*consúlt*	1*	—	—	—	6	4	1	—	8	4	12	
d	*rèpresént*	—	—	—	—	1	1		—	1	1	2	
5	σ́ σ ϕ #	1	3	4	4	—	2	—	—	**5**	**9**		14
6	non-verbal	3	3	3	—	4	3	—	—	10	6		16
Other	*múltiply:*, cf. (52c)	1	1	—	—	1	1	—	—	2	2		4
Total Br or Am		69	69	**90**	**69**	46	43	1					
Total			138		**159**		89		1	206	181		387
Percentage			35		**41**		23		1	53	47		100

* = exceptional, cf. (52a)

As the above chart shows, only 1 variant out of 387 parsed the ending differently from the expected patterns (*optátive*), which means B94's predictions proved to be correct in general. B94 says that every parsing should be well-formed in which two constraints are satisfied and that SP2 and GS are never satisfied together, because these both refer to the first vowel of *-ative.* If GS is satisfied, the ending is pronounced /ətɪv/, if SP2 is satisfied, the ending is secondary stressed /ˌeɪtɪv/ (B94: 299–300). I proposed that the interpretation of the constraints should be different, because in B94's system SP2 and GS are calculable from each other, i.e. fewer constraints would be enough. However, my analysis also uses three constraints, because this way the system can account for existing cases that are not predicted by B94. Furthermore, my interpretation of constraints is closer to the general meaning of Stress Preservation and Generalised Shortening, because in other word classes these generally refer to the stem and not to the ending.

My proposition was as follows. The ending *-ative* has the following three pre-determined parsings: (a:.ti)ve (cf. Pattern 1), a)ti.ve (cf. Pattern 2), and a.ti)ve (cf. Pattern 3). Any one of these can be chosen by a lexical item. The choice depends on the satisfaction of the following three constraints: (i) SP1 is the same as that of B94 (i.e. preservation of the first stem stress); (ii) SP2 means the preservation of the second stem stress, if there is one, otherwise it is inapplicable (iii) GS means the shortening of a stem vowel in the context of an affix, which is either *-ive* (if the stem ends in *-ate,* e.g. *correlate* + *-ive*) or the ending is *-ative* (if the stem does not end in *-ate,* e.g. *cause* + *-ative*). If there is no long vowel in the stem, GS is inapplicable. As for bound stems, they should have well-formed feet and follow one of the three Patterns.

The items in which either all stem stresses are preserved, or in which GS is satisfied will be well-formed. All three constraints would be satisfied by a word whose stem has two stresses and a long vowel, if both stresses are preserved and the vowel shortens. There was no word in my corpus that satisfied these criteria. No words move the first stem stress but keep the second one, while a vowel shortens, i.e. SP1*, **SP2, GS**. This is not surprising, because if the place of the second stress is not modified under suffixation, the first stem stress has no motivation to move away.

B94's collection of constraints predicts as missing the words that belong to Type 4 and follow Pattern 1, as in *connó:te* → *cónnotà:tive*. The reason is that here the stem stress shifts to left, i.e. SP1 is violated, and GS is also violated, because the ending is pronounced *-à:tive*. There were 16 variants in this group (approximately 4 per cent of all variants), which cannot be accounted for by B94, cf. the shaded area in (55). Our modified constraints, however, predicted that 14 of these are regular. In words whose stem contains only one stressed syllable, SP2 is inapplicable. In the variants here either a stem vowel shortens (in 4a, e.g. *connó:te* → *cónnotà:tive*) and this satisfaction of GS alone is enough, or all stem stresses are preserved (SP1), and GS is violated because the stem vowel stays long (in 4b, e.g. *ablá:te* → *ablá:tive*). There are two variants that violated all our applicable constraints, namely *cónno:tà:tive* and *cónsultà:tive*.

As for Type 2 words in Pattern 2, cf. the shaded area in (50), B94's assumptions were contradictory: he claimed that no variants will emerge due to the ill-formedness of *(σHσ), but he gave some words with ($\sigma H_n \sigma$), but his remarks on the existence of these were not clear either. The variants of this group, with the exception of *ínno:vative,* which should be parsed with a binary foot exceptionally, all had ($\sigma H_n \sigma$), which is acceptable. In B94's interpretation Types 1 and 2 in Pattern 3 satisfy only GS, which may be enough in some cases (e.g. *demónstrative*) but not in others (**genérative*). The latter two examples are taken from B94 (p. 299). The situation is similar in my analysis: the satisfaction of GS alone is enough to account for patterns.

Let us examine what we have found about the frequency of patterns. Roughly 1/3 of variants have a long vowel in *-ative,* but these are rarer pronunciations. The most frequent pronunciations follow either Pattern 2 or Pattern 3. Pattern 2, i.e. *-ative* parsed as a)tive, is followed by 41 per cent of variants, i.e. this is the most frequent pattern in the corpus. This is due to our analysis of words like *affí:rmative* as following Pattern 2, with a binary foot, i.e. af(fí:r.ma)ti.ve instead of a ternary one, i.e. af(fí:r.ma.ti)ve, which is also a well-formed parsing. According to the foot typology of B94 (pp. 147–155) a (Hσ) foot is slightly better than a (HLW) foot. The possibility of this binary foot is not discussed in B94 in connection with *-ative* items, he always gives these words with a ternary foot (B94: 299), though the binary parsing follows from his own principles. On the same page he also remarks that vowels will shorten in ternary feet, which is inline with our proposal.

[56] 2.op(tá.ti.ve), cf. (52b)

I have examined both British and American forms and there are not too many differences between the two dialects. There are more British variants than American 206:181, but their distribution is rather similar. Two facts must be mentioned. One is that though generally the number of variants reflects the proportion of British : American, i.e. there are a bit fewer American variants in each group than in British, Pattern 2 is slightly more frequent in British than in American (44 vs. 38 per cent) and Pattern 1 is slightly more frequent in American than in British (38 vs. 33 per cent). This suggests that in American the parsing ati)ve is more preferred than in British. Another difference between the two dialects is that the American variants of Type 5 words outnumber those of British. This is due to the fact that the stems of these variants belongs to Type 5 in American, while it is Type 4 in British, e.g. Br. *ro:tá:te* vs. Am. *ró:tà:te.*

In sum, the analysis of *-ative* words was quite successful in B94: he could not account for 14 variants, though all these were metrically well-formed. I proposed a modification in the interpretation of B94's constraints, as a result of which only two variants were predicted to be missing, namely *cónno:tà:tive* and *cónsultà:tive*. Though the difference is slight between B94's and this analysis, the present account is better because the constraints SP1, SP2 and GS are interpreted on the stem and not on the ending, which is generally the case in B94 with words other than those ending in *-ative*. Furthermore, it was suggested that the variation *dó:native* ~ *dónative* can be explained by assigning different structure to these items. If the vowel is long, a binary foot is built and the word thus follows Pattern 2: *dó:native* = (dó:.na)ti.ve = (HL)WW. If the stem vowel is short, it is assigned a ternary foot and the word will follow pattern 3: *dónative* = (dó.na.ti)ve = (LLW)W. This difference in parsing follows from B94's foot typology, but he does not exploit it in his account of *-ative* words.

10. THE ENDING *-ATORY*

Similarly to *-ative* discussed above (Chapter 9), *-atory* is a complex ending made up of two elements: *-ate* + *-ory*. According to Fudge (1984: 93–94), *-ate* is pre-stressed 2 (stressed two syllables before the ending), e.g. *artículà:te,* while *-ory* is stress-neutral after free stems, e.g. *còntradíctory, prómissory*, and is pre-stressed 1/2 (stressed on the immediately preceding heavy syllable, otherwise two syllables away) in other cases, e.g. *expósitory, òlfáctory.* As for *-atory,* F84 (p. 63) says that the pronunciation of this suffix considerably differs in British and American English. In British there are basically two pronunciations: /eɪtəri/ and /ətᵊri/. In most cases primary stress is two syllables away from the ending, i.e. σ́σ*atory*, as in *artículà:tory* ~ *artículatory,* which is due to the pre-stressed 2 nature of *-ate* and the stress-neutrality of *-ory.* However, there are words with the main stress on the ending, i.e. *-á:tory*, as in *articulá:tory,* which reflects the pre-stressed 1/2 nature of *-ory,* irrespective of the fact that the stem *artículà:te* is a free form. In American the situation is simpler, because the ending is always pronounced /əˌtɔːri/, keeping the normally long vowel of the ending *-ory.* Primary stress is normally two syllables away from the whole ending, e.g. *artículatò:ry.*

In sum, there are four expected patterns. The derivation of all four variants of *emanatory* (*émanà:tory* ~ *èmaná:tory* ~ *émanatory* ~ *émanatò:ry*$_{\mathrm{Am}}$) cause problems to most theories examined. One exception is F84, which gives the above characterisation of the ending *-atory.* The other exception is Halle: 1998, who had special rules for this ending. Liberman—Prince (1977) can derive only *èmaná:tory;* Selkirk (1984) accounts for only *émanà:tory,* and Halle—Vergnaud (1987) only deal with the American pattern. As for Burzio (1994)(B94), in his system *èmaná:tory* and *émanatò:ry*$_{\mathrm{Am}}$ are considered to be regular.

Since the problems which the theories faced have been discussed in detail in the Literature review (Chapter 2), in this Chapter only B94's system is examined and modifications are proposed to account for the facts better. The words ending in *-atory* have been selected from Wells (95 items), and all variants (293 items) are analysed. The full list of these is in Appendix 11. In Section 10.1 I discuss B94's suggestions concerning *-atory*. I propose a modification in the parsing of *-atory* for British variants in 10.2. The variation *-à:tory* ~ *-á:tory* is accounted for in 10.3, while 10.4 discusses the *-atory* /ətᵊri/ pattern. Section 10.5 is dedicated to unexpected patterns displayed by *-atory* words. Section 10.6 sums up my findings.

10.1 Patterns followed by *-atory* words

As we have seen, the ending *-atory* inherits its features from the two suffixes that build it up. The case of *-ate* is simple: the ending is secondary stressed, i.e. it constitutes a weak foot (HW), as in *invéstigà:te* = in(vés.ti)(gà:.te). Primary stress regularly falls two syllables away, due to Strong Retraction. The ending *-ory*, as we saw above, has more complicated patterns. The American variant is stressed (*-ò:ry,* pronounced as /ɔːri/), while in British the ending is unstressed (*-ory,* pronounced as /ərɪ/). Therefore it seems there is more than one pre-determined parsing of the ending. B94 (pp. 268–270) proposes that in British English the ending *-ory* has the structure o)ry, which reflects the pre-stressed 1/2 nature of the ending, i.e. (H o)ry ~ (σL o)ry. In American it is (ò:.ry), carrying post-tonic secondary stress, or if a heavy syllable precedes it is o)ry, as in *reféctory* = re(féc.to)ry, which is identical to the British version. Another important point in B94 (p. 101, Fn. 8) is that the *-o-* in *-ory* (and *-ary*) is regarded "metrically heavy, *a/o* being merely laxed phonetically by the presence of *r*". This is important because it means B94 thinks *-ory* is always HW. This treatment is strange, because B94 often changes the weight of a certain syllable if the pronunciation changes. For example he claims (B94: 155) that the variation *prodúction* ~ *prò:dúction* should be accounted for by the parsings #L(~ #(ø.H) respectively, which means *pro-* can either be H (with a long vowel) or L (with a ɔ). Another similar example is the ending *-ative,* which has the structure LWW if unstressed with a ɔ and HWW if stressed with a long vowel. Therefore I see no reason to maintain B94's assumption of regarding *-ory* as HW if pronounced /ɔri/. This fact will play an important role of the analysis that follows.

First let us see how B94 analyses *-atory* words. B94 says the patterns *émanà:tory* = (é.ma)(nà:.to)ry, *èmaná:tory* = (è.ma)(ná:.to)ry and *émanatò:ry*$_{Am}$ = (é.ma.na)(tò:.ry) have the regular parsing of the ending, i.e. o)ry in British and (ò:.ry) in American English. The variant *émanà:tory* causes problems because (na:.to) is a foot composed of two heavy syllables (HH), i.e. it should be primary stressed. It follows from this that the variant which is a mirror image of the previous one, namely *èmaná:tory,* is regular, though this is less frequent than *émanà:tory*. As it preserves the stress of the stem *émanà:te,* the vowel does not shorten, i.e. SP1 and SP2 are satisfied while GS is not. The problem of these two patterns (*émanà:tory* ~ *èmaná:tory*) will be discussed in detail in 10.3. The American pronunciation *émanatò:ry*$_{Am}$ is regular again. It has a weak foot at the end which is preceded by a regular ternary foot. Strong Retraction is violated here because only a ternary foot preserves the original stem stress (SP1). The second stem stress is not preserved, i.e. SP2 is not satisfied , but GS is: the vowel of *-at-* is shortened and unstressed.

The pattern *émanatory* causes problems, because if we maintain the parsing o)ry, the word will contain a tetrasyllabic foot, i.e. *(é.ma.na.to)ry, which is ill-formed. If we stick to the assumption that *-o-* yields a heavy syllable here, we cannot even say that the whole ending remains unparsed, as in *(é.ma.na)to.ry, because only weak syllables can be extrametrical. B94's suggests (p. 326) that in these forms the penultimate vowel is syncopated and therefore we can leave it unparsed, as in (é.ma.na)t-ry. This solution is not an elegant one and will be examined in detail below (Section 10.4). In the discussion that follows I will propose new analyses for the British variants of *-atory,* because it is only the American pronunciation that is really straightforward in B94.

10.2 A new analysis

B94's assumption that the *-o-* in *-atory* yields a heavy syllable is not well-grounded. There is no *-ory* word (including the ones in *-atory*) that is pronounced with a long /ɔ:/ in British English, the pronunciation is either /ɔ/ or in some cases the vowel is syncopated, as in *obsérvatory* /əbˈzɜːvətri/ (cf. Wenszky: 1996). This suggests that we have no reason to believe that in present

day British English this vowel is long, because stress is the only process that is sensitive to syllable weight. I suggest that instead of analysing it as heavy, this syllable in British English should be analysed as weak. Now I will examine the possibility of this analysis.

B94 says that weak syllables are acoustically weak (p. 16–17). However, the reduced vowel in the first syllable of the ending is neither high (i.e. an *i/u*), nor a null vowel. B94 (p. 71) says that the "'weak syllable' behavior of high vowels [...] is partially shared [...] by syllables with reduced vowels", therefore it is possible to analyse /ɔ/ as a nucleus yielding a weak syllable.

If we regard the syllable in question to be W, the words in *-atory* will have the structure HWW[57]. It is possible in B94's system to have two consecutive weak syllables where both W's are extrametrical, as in (56a), or where the first weak syllable is metrified, the second is extrametrical (56b), or where both weak syllables are metrified (56c), though these are not explicitly recognised and the examples in B94 are probably misprints. Logically, a fourth variation is also possible (WW), but this foot would be too light. This means that *-atory* can be parsed as a)tory and ato)ry beacuse these two parsings are well-formed. The possibility of parsing it as (atory) will be discussed below. It must be noted that B94 does not consider feet (WW) and (σWW) among the logically possible foot types (cf. B94: 147–155), though he recognises the existence of WW sequences.

(56) **Consecutive W syllables in B94**

(56a) (nó.mi.na)ti.ve = (LLL)WW	(B94: 68)
(56b) in(vés.ti)(gà:.ti)ve = σ(HL)(HW)W	(B94: 325)[58]
(56c) (ín.no)(và:.ti.ve) = (HL)(HWW)	(B94: 16)

(56a) and (56b) fit into B94's theory without problems. Compared to previous theories, the idea of having two extrametrical syllables is unusual because the scope of extrametricality is generally one segment or one syllable. It is the third analysis (56c) which primarily interests us here. In B94 these rarely occur and are used to account for the stress pattern of multiply suffixed items (57a–d) and for the analysis of words ending in *-ive* and *-ure* (57e–k).

[57] I do not question the heaviness of *-a-* in *-ate* + *-ory,* because it appears with a long vowel in both dialects (though in American not in words in *-atory,* due to GS).

[58] Burzio vacillates between the analyses (i) in(vés.tig)(à.te) (B94: 279) and (ii) in(vés.ti)(gà.te) (B94: 325). I think the second is the correct one, because B94's other examples suggest that intervocalic consonants are always parsed with the second vowel, even if there is a morpheme boundary e.g. (állego)(rì:ze) (B94: 267), de(líbe)(ràte) (B94: 279) etc.

(57) **(σσW) feet in B94** (pp. 16, 236, 242–243, 325)

(HW)W		(σσW)	
(57a) dis(crí.mi)(nà:.tin)gϕ	→	(57c) dis(crì.mi)(ná:.tin.gly)	p. 243
(57b) pre(mé.di)(tà:.te)dϕ	→	(57d) pre(mè.di)(tá:.ted.ly)	p. 243
? (σ̀WW)		(σ̀W)W	
(57e) (ín.no)(và:.ti.ve)	p. 16	(57i) in(vés.ti)(gà:.ti)ve	p. 325
(57f) (ár.chi)(tèc.tu.re)	p. 16	(57j) (lé.gis)(là:.ti)ve	p. 242
(57g) (í.mi)(tà:.ti.ve)	p. 243	(57k) (lé.gis)(là:.tu)re	p. 242
(57h) au(thó.ri)(tà:.ti.ve)	p. 243		

At closer examination of the parsings in (57) it turns out that in many cases B94 contradicts his own principles. In (57a) the final foot—though should be and is thought to be weak—is strong, because the second syllable is closed, and closed syllables are not weak. On p. 255 Burzio claims that the endings *-ing* and *-ed* should be parsed as W)W = i)ngø, e)dø. He does not comment on the impossibility of an onset *ng, though it is true that this letter combination denotes one sound: /ŋ/. Probably this is the reason why it can appear foot-initially, though this is not expressed in B94.

(57d) shows the only way in which the word *premeditatedly* can be syllabification, though B94 (p. 243) does not give syllable boundaries. The division *(ta.te.dly) is wrong, because *dl-* is not a possible onset in English. As a result, the medial syllable of the foot becomes heavy, and the arising foot (HHW) is unacceptable in theory. On page 114 B94 suggests that if needed for syllabification, the stem-final null vowel is not suppressed by the following ending, thus *-tatedly* should be parsed as (ta.te.dø)ly, according to Burzio's own logic.

The third problem is that in the words in (57e–h) a ternary foot receives post-tonic secondary stress, which should only appear on weak feet, which are binary by definition. Words that are similar to (57e–h) are analysed as (57i–k) (B94: 242), where this problem does not occur. I think analyses like (57e–h) are misprints. On the basis of (57i–k), *innovative, architecture, imitative* and *authoritative* should be analysed as (ín.no)(và:.ti)ve, (ár.chi)(tèc.tu)re, (í.mi)(tà:.ti)ve, au(thó.ri)(tà:.ti)ve, respectively.

The aim of this discussion has been to show that analysing WW sequences as part of a ternary foot is not a well-developed part of B94's theory. However, from the text it seems that ternary feet cannot be regarded weak at all (cf. B94: 70, 235–239). This means that the head of a (HWW) foot should be primary stressed. These findings will be exploited in the analyses below, where *-atory* in British will be treated as HWW.

10.3 *-à:tory* and *-á:tory* in British English

The words *émanà:tory* ~ *èmaná:tory* were problematic because B94 suggested that the word ends in HHW, so the ending is regularly primary stressed. As for the secondary stressed variant, B94 only analyses *artículà:tory* from this class of words, and gives it the parsing ar(tí.cu)(là:.to)ry (p. 327). He claims that in words like this the primary stress exceptionally skips the rightmost foot, which in his analysis consists of two heavy syllables (HH) (cf. B94: 231, Fn. 2). If we accept the analysis that *-atory* is HWW, primary stress regularly falls on the first foot of *artículà:tory* = σ(Lσ)(HW)W. This pattern is displayed by 32 (i.e. 1/3) of the 95 words ending in *-atory,* see (58) for the complete list of *-à:tory* variants. The numbers before the analysed words correspond to the number given to the variant in Appendix 11: 3.(cón.fis)(cà:.to)ry means that this is the third most frequent variant of *confiscatory.* The underlined 6 words in the list have this pattern as their most frequent pronunciation (i.e. these appear with number 1).

(58) ***-à:tory* in British English (32 items) = ádu(là:.to)ry = (HW)W**

2.(á.du)(là:.to)ry, 2.(ám.bu)(là:.to)ry, 3.ar(tí.cu)(là:.to)ry, 2.(cé.le)(brà:.to)ry, 2.(cóm.pen)(sà:.to)ry, 3.con(cí.li)(à:.to)ry, 3.(cón.fir)(mà:.to)ry, 3.(cón.fis)(cà:.to)ry, 2.(dé.ni)(grà:.to)ry, 1.(dé.pre)(cà:.to)ry, 3.(dé.pre)(dà:.to)ry, 1.e(lú:.ci)(dà:.to)ry, 1.(é.ma)(nà:.to)ry, 2.(éx.pi)(à:.to)ry, 3.hal(lú:.ci)(nà:.to)ry, 1.(ím.pre)(cà:.to)ry, 2.in(crí.mi)(nà:.to)ry, 2.(ín.cul)(pà:.to)ry, 1.(ín.no)(và:.to)ry, 2.in(tí.mi)(dà:.to)ry, 1.(jús.ti.fi)(cà:.to)ry, 2.(lách.ry)(mà:.to)ry, 2.(más.ti)(cà:.to)ry, 2.(má:s.tur)(bà:.to)ry, 2.(ób.ju(:)r)(gà:.to)ry, 3.(ós.cil)(là:.to)ry, 2.pro:(pí.ti)(à:.to)ry, 2.(pú:.ri.fi)(cà:.to)ry, 2.(ré.gu)(là:.to)ry, 3.(rés.pi)(rà:.to)ry, 2.re(vé:r.be)(rà:.to)ry, 2.(súp.pli)(cà:.to)ry

There are two problems with this parsing. The first is that in B94 the final foot is (HH) and primary stress is exceptionally retracted to the previous foot, as noted above. This problem disappears in our analysis. The other difficulty is that 28 words out of the 32 with this pronunciation have a variant that has primary rather than secondary stress on *-á:tory,* see (59) for some examples. The exceptions are *hallucinatory, incriminatory, innovatory, reverberatory.*

(59) ***-à:tory* vs. *-á:tory***

(59a) **Secondary stress** (=(58))	(59b) **Primary stress**
(dép.re)(cà:.to)ry	(dèp.re)(cá:.to)ry
e(lú.ci)(dà:.to)ry	e(lù.ci)(dá:.to)ry
(é.ma)(nà:.to)ry	(è.ma)(ná:.to)ry
(ím.pre)(cà:.to)ry	(ìm.pre)(cá:.to)ry
(jús.ti.fi)(cà:.to)ry	(jùs.ti.fi)(cá:.to)ry

Comparison of the two columns reveals that the two variants are the mirror images of each other, the foot-heads are the same. The only difference is that the second foot is secondary stressed in (59a), and primary stressed in (59b). B94's explanation for this duality is that in (59a) the primary stress is exceptionally not on the rightmost non-weak foot. The explanation proposed here, according to which these words end in (HW)W, only accounts for (59a). If we want to maintain the binary foot in (59b) as well, *-to-* should be non-weak there. This Janus-faced behaviour of the syllable *-to-* /tɔ/ could be due to the fact that ɔ does not automatically yield weak syllables (B94: 71), it is just a possibility. The above analysis, i.e. (á:.to)ry ~ (à:.to)ry, has a major disadvantage: the two differently stressed variants have the same parsing, and a relatively 'invisible' factor (i.e. whether primary stress works normally or whether *-to-* counts as W or not) differentiates the two variants. In order to base our explanation of (59a) vs. (59b) on more solid grounds, the analysis of one type should be changed. With monosyllabic feet excluded, the only remaining possibility is to analyse one type as having a ternary foot.

If we want to distinguish the variants *émanà:tory* ~ *èmaná:tory* by assigning different foot structures to them, it is only the second variant that can have a final ternary foot, for rightmost ternaries carry the primary stress. B94 says that the ternary foot (σσry) is unacceptable because the medial syllable counts as heavy (p. 101), resulting in the foot *(σHσ).[59] However, if we adopt the assumption that in British English (σσry) is in fact (HWW), this foot will not violate the constraint against foot-internal heavy syllables. Therefore in our analysis *èmaná:tory* will be exceptional in the sense that the final syllable of the ending will be parsed: (è.ma)(ná:.to.ry). A full list of 63 variants with this pattern is given in (60). Out of these 8 has this ternary foot as the only foot in the word. The underlined variants (26 items) are the most frequent variants of the word.

[59] It seems that the condition on alignment of heavy syllables with stresses (B94: 166) is problematic. For instance, concerning syllables ending in a sonorant or *s* (H_n), B94 gives contradictory analyses. He claims that these count as light when unstressed (pp. 62, 93), e.g. (ín.ven.to)ry (B94: 107). However, later he argues that the pattern *(a.dum.bra)ti.ve is unattested, because the medial syllable (actually a H_n syllable) counts as heavy (B94: 138). It is true that *adumbrative* does not have a variant like this, but I do not think B94's explanation is acceptable. On this issue see also Section 9.4.1.1 above.

(60) ***-á:tory* in British English (63 items) = àccu(sá:.to.ry) = (HWW)**

2.(àc.cu)(sá:.to.ry), 1.(à.du)(lá:.to.ry), 1.(à.le)(á:.to.ry), 1.(àm.bu)(lá:.to.ry), 2.an(nùn.ci)(á:.to.ry), 2.an(tì.ci)(pá:.to.ry), 3.(àn.ti.ci)(pá:.to.ry), 1.(àp.pro:)(bá:.to.ry), 2.ar(tì.cu)(lá:.to.ry), 2.as(sì.mi)(lá:.to.ry), 1.(cè.le)(brá:.to.ry), 1.(cì:r.cu)(lá:.to.ry), 1.(clà.ri.fi)(cá:.to.ry), 1.(clàs.si.fi)(cá:.to.ry), 2.(còm.men)(dá:.to.ry), 1.(còm.pen)(sá:.to.ry), 4.con(cì.li)(á:.to.ry), 3.(còn.dem)(ná:.to.ry), 2.(còn.fir)(má:.to.ry), 2.(còn.fis)(cá:.to.ry), 1.con(grà.tu)(lá:.to.ry), 2.(ø.còn)(grà.tu)(lá:.to.ry), 1.(dè.ni)(grá:.to.ry), 2.(dè.pre)(cá:.to.ry), 2.(dè.pre)(dá:.to.ry), 2.dis(crì.mi)(ná:.to.ry), 2.e(lù:.ci)(dá:.to.ry), 2.(è.ma)(ná:.to.ry), 2.(èx.cu)(sá:.to.ry), 3.(èx.pi)(á:.to.ry), 1.ges(tá:.to.ry), 2.hal(lù:.ci)(ná:.to.ry), 2.ho:r(tá:.to.ry), 2.(ìm.pre)(cá:.to.ry), 1.(ìn.can)(tá:.to.ry), 3.(ìn.cul)(pá:.to.ry), 1.in(tì.mi)(dá:.to.ry), 2.(jùs.ti.fi)(cá:.to.ry), 1.(làch.ry)(má:.to.ry), 2.man(dá:.to.ry), 3.(màs.ti)(cá:.to.ry), 1.(mà(:)s.tur)(bá:.to.ry), 2.mi:(grá:.to.ry), 3.(òb.jur)(gá:.to.ry), 2.(òs.cil)(lá:.to.ry), 1.pa:r(tì.ci)(pá:.to.ry), 2.(pà:r.ti.ci)(pá:.to.ry), 1.pho:(ná:.to.ry), 1.pla(cá:.to.ry), 3.pro:(pì.ti)(á:.to.ry), 1.pul(sá:.to.ry), 1.(pù:.ri.fi)(cá:.to.ry), 2.(rè.con.ci)li(á:.to.ry), 2.re(crì.mi)(ná:.to.ry), 1.(rè.gu)(lá:.to.ry), 4.(rès.pi)(rá:.to.ry), 2.re(tà.li)(á:.to.ry), 1.ro:(tá:.to.ry), 1.(stè:r.nu)(tá:.to.ry), 2.(stì.pu)(lá:.to.ry), 1.(sùp.pli)(cá:.to.ry), 2.(ùn.du)(lá:.to.ry), 1.vi:(brá:.to.ry)

We have seen two solutions. B94's solution violates one of his basic constraints, namely the constraint for Primary Stress, whereas I analyse *-atory* as HWW for British English, which gives out the correct patterns without violation. The foot (HWW) is not explicitly mentioned (only occasionally and probably mistakenly used) in B94, and is a new foot in the inventory of well-formed feet.

Further evidence is provided in favour of my solution by foot-weight calculation. B94 calculates the weight of feet in the following manner (cf. B94: 148–149). He stipulates that the intrinsic weight of H syllables is 3, that of W ones is 1. Then he takes a multiplicative factor that is associated with each position within a foot. For ternary feet these are: 3 for σ_1, 2 for σ_2 and 1 for σ_3. The weight of the foot can be calculated by multiplying these numbers with the relevant intrinsic syllable weights. B94 claims that the ideal weight for a rightmost foot is 12. Let us apply this method to the new foot (HWW). In ternary feet the first syllable counts 3 times, the second one twice and the third one once, i.e. $3\times3 + 2\times1 + 1\times1 = 12$, the ideal weight for a rightmost ternary foot. This supports our assumption that (HWW) is well-formed.

10.4 The pattern *émanatory*

The pattern *émanatory,* pronounced as /ˈemənətəri/ or /ˈemənətri/, is problematic because of the long sequence of unstressed syllables. B94 (p. 326) analysed these words as (é.ma.na)t-ry, i.e. with syncope in the penultimate syllable. Syncope deserves a digression here. Syncope is defined as "formative-internal deletion" by Lass (1984: 187), which means "loss of medial sounds" (Crystal, 1987: 328). In English this phenomenon occurs with unstressed vowels /i/ or /ə/, if this loss does not result in a stress clash (for a detailed account of syncope see Kürti: 1999).

Wells treats these examples as possible targets of compression (which is a cover term for what is traditionally called syncope). By compression he means (pp. 152–153) exactly the same thing as B94: two syllables pronounced as one. This process is always optional: there is a careful, longer pronunciation and a compressed, fast pronunciation, e.g. *lenient* /ˈliːniənt/ ~ /ˈliːnjənt/, *maddening* /ˈmædənɪŋ/ ~ /ˈmædnɪŋ/. The uncompressed version appears in rare words, slow/deliberate speech and the first time the word is used in the discourse. The compressed version is used in other cases. The dictionary only gives these as two separate pronunciations if the compressed form has become lexicalised, as in *every* /ˈevri/ ~ /ˈevəri/. Generally the place of possible compression is marked by a diacritic symbol /̬/. This means that stresses always stay on the same syllable, regardless of whether there is compression or not. Syncope is most likely before *r,* which is the environment we are dealing with. Hooper (1978) examined 112 words ending in -VCəry, but her study was only concerned with American English. The pattern we are dealing with here, however, occurs in a British variant, i.e. Hooper's study was found irrelevant for our purposes here.

As for the analyses of vowel–zero alternations, these are analysed in one of three ways in the literature. One can look at the process as a loss of vowel (i.e. syncope), which is what B94 does, but he does not give a detailed analysis. Another way is to look at the process as vowel epenthesis. The third is to suppose that there are lexically present nuclei at the alternation site, which are sometimes realised and at other times are not (e.g. Kürti: 1999). But irrespective of the analysis, it is unquestionable that in English the process is optional apart from the lexicalised cases. What this short section on syncope aimed to show is that although *-atory* words may undergo syncope: *emanatory* /ˈemənətəri/ ~ /ˈemənətri/, the careful/slower pronunciation of these items also exists.

Another question is how syncope and stressing are related. Traditionally, stressing comes first and then unstressed syllables may lose their head (i.e. nucleus) in certain circumstances. In a traditional account, therefore, it would be impossible to say that a syllable remains unparsed because it is syncopated, because stressing (i.e. parsing) precedes syncope, which is a fast-speech process and as such is post-lexical. B94, however, thinks there is no derivation, so probably this "ordering paradox" does not cause him problems, though this question is not touched upon in his book.

In sum, B94's analysis is acceptable if syncope does take place, but in careful speech the schwa does appear in the penult, giving /ˈemənətəri/, which is still unaccounted for. Since tetrasyllabic feet are excluded, i.e. *émanatory* =*(é.ma.na.to)ry, and heavy syllables (recall that B94 says *-ory* is HW) cannot be extrametrical, i.e. *émanatory* = *(é.ma.na)to.ry = (σLσ)*HL, keeping to B94's assumptions this pronunciation cannot be accounted for.

I instead proposed that in British English the penultimate syllable of the ending is weak, rather than heavy, i.e. leaving it unparsed is regular, as in *émanatory* = (é.ma.na)to.ry = (LLH)WW. This parsing is different from any of the pre-determined parsings of *-atory* (i.e. a.to)ry and (a:.to)ry proposed by B94 and (a:.to.ry) proposed here). However, the parsing is metrically well formed, the long vowel of *-atory* is short because of GS (and as a result may be analysed as light), while the second stem stress is not preserved (SP2 is violated), in the same manner as proposed by B94. The full list of 34 variants with this pattern is given in (61)

(61) ***-atory* in British English (34 items) = (á.le.a)to.ry = L)WW**

2.(á:.le.a)to.ry, 1.an(nún.ci.a)to.ry, 1.an(tí.ci.pa)to.ry, 1.ar(tí.cu.la)to.ry, 1.as(sí.mi.la)to.ry, 3.(cé.le.bra)to.ry, 2.(cí:r.cu.la)to.ry, 1.con(cí.li.a)to.ry, 2.(ø.còn)(cí.li.a)to.ry, 3.con(grá.tu.la)to.ry, 1.(dé.di.ca)to.ry, 1.de(pré:.ci.a)to.ry, 1.dis(crí.mi.na)to.ry, 3.(é.ma.na)to.ry, 1.(éx.pi.a)to.ry, 1.hal(lú:.ci.na)to.ry, 1.in(crí.mi.na)to.ry, 2.(ín.no.va)to.ry, 3.(lách.ry.ma)to.ry, 1.(más.ti.ca)to.ry, 1.ob(sé:r.va)t-.ry, 2.ob(sé:r.va)t-.ry, 1.(ós.cil.la)to.ry, 3.pa:r(tí.ci.pa)to.ry, 1.pro:(pí.ti.a)to.ry, 1.(rè.con)(cí.li.a)to.ry, 1.re(:)(crí.mi.na)to.ry, 3.(ré.gu.la)to.ry, 2.(rés.pi.ra)to.ry, 1.re(:)(tá.li.a)to.ry, 1.re(vé:r.be.ra)to.ry, 1.(stí.pu.la)to.ry, 3.(súp.pli.ca)to.ry, 1.(ún.du.la)to.ry

10.5 Other patterns

There is one more class of *-atory* words that deserves mentioning, namely words ending in *-ficatory.* Each of the four words in the corpus (*clarificatory, classificatory, justificatory, purificatory*) has several variants, most of which display the patterns described above. There are, however, variants which have not been accounted for. One is similar to the pattern just described above, i.e. there is only one stressed syllable in the word, as in *cláríficatory.* Only one foot can be built in this word, which may be maximally ternary, as tetrasyllabic feet are excluded, which results in (clá.ri.fi)ca.to.ry. For a full list of 4 items following this pattern, see (62).

(62) **Three unparsed syllables: fi)ca.to.ry (4 items)**

2.(clá.ri.fi)ca.to.ry, 2.(clás.si.fi)ca.to.ry, 3.(jús.ti.fi)ca.to.ry, 3.(pú.ri.fi)ca.to.ry

This parsing leaves three syllables unparsed, which are pronounced /kətəri/ or occasionally /kətri/. It seems here even the *-a-* of *-atory* has to be reanalysed as W, because only weak syllables can be extrametrical.

Another problematic pattern is also connected to *-ficatory* items, though it appears in one variant of *rèconciliá:tory* as well. In some cases there are two stem stresses but there are three unstressed syllables between them, as in *cláríficatò:ry* = (clá.ri.fi)ca(tò:.ry). If we want to avoid a tetrasyllabic foot, i.e. (clá.ri.fi.ca)(tò:.ry), one syllable in the middle must be left unparsed, which is what B94 (pp. 241, 308–309) proposes. This medial unparsed syllable appears in four variants (63).

(63) **Medial unparsed syllable = (clá.ri.fi)ca(tò:.ry) (4 items)**

3.(clá.ri.fi)ca(tò:.ry), 3.(clás.si.fi)ca(tò:.ry), 5.(pú.ri.fi)ca(tò:.ry), 2.(rè.con.ci)li(á:.to.ry)

10.6 Summary

I have found that B94 can only account for the patterns of *-atory* words if major violations of his own principles (i.e. primary stress exceptionally falls on the second foot from the right, a H syllable is extrametrical) occur. I suggested that the systematic difference between British and American pronunciations of the ending *-atory* can be better reflected if the pre-determined structures for them differ not only in foot boundaries (as B94 suggests), but also in the weight of the penultimate syllable. Since in British English the penult is always reduced or syncopated, I suggested the syllable structure of the ending should be HWW rather than HHW, which should be reserved for the American variant. As a result, the pre-determined parsings of *-atory* will be as given in (64).

(64) **The proposed pre-determined parsings for *-atory***

British English		**American English**	
-atory /ətəri/ ~ /eɪtəri/ = HWW		*-atory* /əˌtɔːri/ = HHW	
H)WW	*émanatory* = (é.ma.na)to.ry	H(HW)	*émanatò:ry* = (é.ma.na)(tò:.ry)
(HW)W	*émanà:tory* = (é.ma)(nà:.to)ry		
(HWW)	*èmaná:tory* = (è.ma)(ná:.to.ry)		

The ternary foot (HWW) is not examined by B94 as a candidate for a well-formed foot. I have demonstrated that by adding this foot to the inventory of possible feet, the difference between *émanà:tory* and *èmaná:tory* can be explained better. The weight of this foot is 12, which is ideal for a rightmost ternary foot. This new foot can also account for words like *mànufácture* = (mà.nu)(fác.tu.re), which are exceptional in B94.

PART IV: SUMMARY

11. CONCLUSIONS AND MAJOR FINDINGS

This chapter summarises the findings of the dissertation. I found that the analysis of a large corpus of words that contains all variants of these words is a successful method of testing the adequacy of stress theories. It must be noted, however, that it is not always easy to determine which syllables bear stress since stress does not have a unique phonetic correlate. Therefore, my analysis was based on the data of the Longman Pronunciation Dictionary (Wells: 1990), rather than on data collected from native speakers. In some respects, for example in the judgement of adjacent stresses, dictionaries considerably differ. This means that my analysis reflects the judgements of Wells (1990), which may differ from the judgements of others. The sections below sum up the most important points in the study, concentrating on the answers to the research questions presented in Chapter 1. These are repeated here in (1) for convenience.

(1) **Research questions** (= (1) in Chapter 1)

(1a) **Pre-tonic secondary stress**

(i) Is Fudge (1984)'s classification of prefixes and classical compound-initials correct?

(ii) How can this classification be incorporated into Burzio (1994)'s system?

(iii) Does this incorporation improve the explanatory force of the theory?

(iv) Is Burzio (1994: 155)'s claim that initial syllables are either light and unstressed or heavy and stressed true?

(v) Is Burzio (1994, 1996)'s claim that Stress Preservation is the major factor beside Metrical Well-formedness in the stress placement of derived items true?

(1b) **Post-tonic secondary stress**

(i) Can post-tonic secondary stress appear in disyllabic words?

(ii) How can we account for these in Burzio (1994)'s system?

(iii) How can we account for the different stress patterns of *-ative* words (cf. *affírmative ~ génerative ~ invéstigà:tive*)?

(iv) How can we account for the different stress patterns of *-atory* words (cf. *émanà:tory ~ èmaná:tory ~ émanatory ~ émanatò:ry*$_{\mathrm{Am}}$)?

(1c) **General questions**

(i) Is the inventory of possible feet (Burzio: 1994) correct?

(ii) Does Burzio (1994)'s constraint hierarchy account for the facts?

(iii) Does the behaviour of syllables closed by sonorants or *s* support Burzio (1994)'s claim that these syllables behave as light when unstressed, i.e. they may appear in the middle of a ternary foot?

11.1 Pre-tonic secondary stresses

11.1.1 Prefixes and compound-initials

Examining the stress-patterns displayed by words in my corpus, I found that the classification of prefixes and classical compound-initials provided by Fudge (1984)(F84) could be accepted with some modification. This modification concerns classical compound-initials, which are divided into two sets by F84. Type 1 compounds are composed of a compound-initial of Greek or Latin origin and a free stem; the final vowel of the compound-initial may be long; and the first syllable of the compound-final does not reduce. Type 2 compounds are generally composed of two bound elements of Greek or Latin origin; the final vowel of the compound-initial is generally short; the first syllable of the compound-final is reduced if not stressed. These two classes of compounds are stressed in the same way if the compound-final is a sequence HW in Burzio (1994)(B94)'s sense. If the compound final is longer, Type 1 compounds are stressed as if they were composed of two separate stress-domains, while Type 2 compounds behave like one item. One compound-initial may belong to both sets, e.g. *auto-* forms a Type 1 compound in *àuto-chánger,* and a Type 2 compound in *àutónomous.* F84 assigns compound-initials such as *hetero-, homo-, mega-* to Type 2 compound-initials.

I proposed that all those classical compounds in which the compound-final is a free stem, should be assigned to the class of Type 1 compounds, e.g. *hèterocýclic,* even if the compound-final is also of Latin and Greek origin. The reason for this proposal was that in this kind of compounds all other characteristics of Type 1 compounds occur (e.g. *hetero-* pronounced as /hetərəʊ/), and the stress pattern of the compound-finals is the same as that of the stem, i.e. in our example that of *cýclic.* Furthermore, secondary stress is assigned to the two parts separately. If the word *hò:mo:eróticism* were a Type 2 compound, secondary stress should fall on a strong syllable two syllables back from the primary stress, i.e. **ho:mò:eróticism*, according to F84's own rules (p. 31). If, however, this word is a Type 1 compound, secondary stress will fall on the initial syllable. Therefore my assumption proved to be correct.

B94 proposed that the influence of suffixes on stressing can be accounted for if suffixes have pre-determined structure (i.e. foot boundaries). As some prefixes and classical compound-initials of Type 1 also influence the place of stress in words, I extended B94's proposal to this class of morphemes. The structures I attributed to the morphemes are shown in (2).

(2) **Pre-determined structures of prefixes and classical compounds**

<table>
<tr><th colspan="3">Class</th><th>Structure</th><th colspan="2">Examples</th></tr>
<tr><td rowspan="4">Prefix</td><td rowspan="2">Neutral</td><td>Dependent</td><td>syllable boundaries</td><td>co- = co.</td><td>cohàbitátion ~ còhàbitátion</td></tr>
<tr><td>Autostressed</td><td>foot</td><td>mis- = (ϕ.mis)|</td><td>mìsàpprehénsion</td></tr>
<tr><td colspan="2">Repellent</td><td>—</td><td>com- = com</td><td>cómplicàte</td></tr>
<tr><td colspan="2">Primary stressed</td><td>foot-head</td><td>com- = (com</td><td>cómbine$_{N}$</td></tr>
<tr><td rowspan="2">Classical Compoun d</td><td>Type 1</td><td colspan="2">CCI1 forms a foot and a separate domain (Extended Word-condition)</td><td>anti- = (an.ti)|</td><td>àntiballístic</td></tr>
<tr><td>Type 2</td><td colspan="2">final ϕ parsed with CCF</td><td>-graph = gra.phϕ)</td><td>hológraphy</td></tr>
</table>

Dependent and stress-repellent prefixes cannot be assigned a foot-structure, since their stressing largely depends on the sequence that follows them. Autostressed prefixes, which are always stressed according to F84, constitute a foot and a domain on their own. This structure could not really be tested for the rarity of words with these morphemes in my corpus. The existence of words like *mìsinformátion* = *(ø.mìs)|in.for(má:.ti.o)nø in which two syllables would remain unparsed, however, indicates that my proposal may be too strong. It is possible that these prefixes do not constitute a separate domain or may have more than one parsing: (ø.mis) and (mis. This problem needs further investigation.

My predictions concerning classical compounds, however, proved to be true. As stress is assigned to the two parts of Type 1 compounds separately, I proposed that there should be a domain boundary between them. In B94's terms it can be expressed by extending the Word-condition to Type 1 compound-initials. Furthermore, the pre-determined parsing for a Type 1 compound-initial is a foot and the domain-boundary is marked by a vertical line, as in *hetero-* = (he.te.ro)|, *electro-* = e(lec.tro)|, *homo-* = (ho.mo)|. It is not enough to declare that Type 1 compound-initials form a separate domain, because in that case we would expect variation in the pronunciation of *hetero-* = LLH*,* for example, as he(tè.ro:) ~ (hè.te.ro:), which does not occur if the compound-final is a free form. Primary stress is regular: it is on the final non-weak foot of the compound.

The analysis of words showed that my predictions are correct. Words like *màcro:cli:mátic* would exceptionally contain an unparsed heavy syllable in the middle (to avoid *(σHσ)) if analysed in B94's manner, as in ?(mà.cro:)cli:(má.ti.cø), or a word-internal null element as in ?(mà.cro:)(clì:.ø)(má.ti.cø), if secondary stress were assumed on *-cli-* (which is not given in Wells (1990)). In my analysis, (mà.cro:)|cli:(má.ti.cø), the unparsed syllable is at the beginning of a domain (cf. words like ad(mì.nis)(trá:.ti.o)nø, with a heavy unparsed syllable at the beginning), and the word is regular.

As for Type 2 compounds, I suggested that in these words the compound-final, which is chosen from a limited set of bound morphemes, behaves like a suffix. From this it follows that it is the compound-final rather than the compound-initial that has pre-determined parsing. Furthermore, the place of stress in the compound-initial varies depending on what follows (cf.

càtatónia vs. *catástrophe*). I proposed following B94 that Type 2 compound-finals should have pre-determined parsings, but not as complete feet as B94 suggests, i.e. *-graph* = (gra.phø). Rather, a rightmost boundary following the final null segment is enough, as examples like *cìnematógraphy* = (cì.ne.ma)(tó.gra.phy) show. However, almost all Type 2 compounds were suffixed in the corpus, which influenced the stressing of compound-finals. I also proposed that Latin/Greek suffixes such as *-ia* should have the same parsing, i.e. a right boundary after the final null element. This parsing proved to account correctly for the data.

By suggesting pre-determined parsings for compound initials and autostressed prefixes, the theory of B94 has been enriched. The most important impact of this modification is that Type 1 compounds that have a heavy second syllable, such as *tòxo:plasmó:sis,* will now be regular.

11.1.2 Initial unstressed syllables and stress preservation

B94's claim of that an initial syllable immediately followed by a stressed syllable must be either (i) light and unstressed, i.e. #L(; or (ii) heavy and stressed, i.e. #(ø.H)(; and that other possibilities, i.e. *(ø.L) and #H(, are excluded did not prove to be true. There were no light stressed initial syllables before another stress in the corpus, i.e. one half of the claim is correct: *(ø.L). However, several words contained an unstressed initial heavy syllable. Counterexamples fall into the following categories (3) .

(3) **Unstressed word-initial heavy syllables**

Type		σ weight	Example
(3a) split geminate	CVC$_1$.C$_1$	H$_n$	as(sàs.si)(ná:.ti.o)nø
		H	ac(cèp.ta)(bí.li.ty)
(3b) split cluster	CVC$_1$.C$_2$	H$_n$	an(tè:.ri)(ó.ri.ty)
		H	ad(mì.nis)(trá:.ti.o)nø
(3c) long vowel	CVV.	H	co:(à.gu)(lá:.ti.o)nø
(3d) long vowel + C	CVVC.	H	pe:r(fèc.ti)(bí.li.ty)

Heavy syllables in (3a) are due to B94's method of syllabifying geminate consonants into two syllables. Examples in (3b–d), however, contain heavy syllables for all theories. Those examples that have a H$_n$ syllable at the beginning are not problematic for B94, since these syllables count as light in unstressed position. All others contain a true heavy syllable, which in B94's view should be stressed. Wells (1990), however, does not mark these as stressed, though his dictionary marks pre-tonic stresses and adjacent stresses. The existence of such examples led me to the conclusion that the constraint *H(should be loosened and though this configuration may be dispreferred, it does exist. In the analysis of words that have secondary stress on the second syllables (i.e. Group II) 43 per cent had an initial L syllable, 19 percent an initial H$_n$ syllable, and 38 per cent an initial H syllable (which could be the result of a split geminate, a split cluster or a long vowel in the first syllable).

As for Stress Preservation, the analysis of words primary stressed on their fourth syllable proved that this is a very strong constraint, which is almost always responsible for the place of pre-tonic secondary stress in derived items. This was confirmed by words ending in *-ation,* which had secondary stress on the syllable that was stressed in their stem, e.g. *dócument ~ dòcumentá:tion,* and *affìlià:te ~ affìliá:tion.*

11.2 Post-tonic secondary stresses

The first issue that was examined here is the question of disyllabic words which have two stressed syllables according to some dictionaries. B94 claims that such short words can only display the pattern secondary–primary, as in *crèá:te* = (ø.H)(H.ø). If the primary stress is on the first syllable, the second syllable will be unstressed with a full vowel, e.g. *chlóri:de* = (HH)W. This proposition elegantly solves the problem, and is in line with B94's claim that full or even long vowels are not necessarily stressed. However, I doubt that this claim is correct in the case of suffixed words, when the suffix bears secondary stress in all of its occurrences, e.g. *-hood.* I tentatively suggested that in this case, to preserve the pre-determined parsing of the ending, primary stress falls on the first foot rather than on the second. This indeterminacy, i.e. #(ø.σ́)(σ̀.ø)# ~ #(ø.σ̀)(σ́.ø)# as in *séxìsm* = (ø.séx)(ìs.mø) vs. *èxpórt*$_V$ = (ø.èx)(pó:r.tø), may be due to the fact that B94's constraint for primary stress (p. 16) says that primary stress is on the rightmost non-weak foot, which does not cover cases where there are only weak feet in a word.

The analysis of *-ative* words proved B94's claim that the ending has three pre-determined parsings, namely a.ti)ve = af(frí.ca.ti)ve, a)ti.ve = ac(cú:.mu.la)ti.ve, (a:.ti)ve = ac(cú:.mu)(là:.ti)ve. The meaning of the constraints Generalised Shortening (GS) and Stress Preservation (SP) was modified in order to account for facts better. I understood these as constraints working on the stem of *-ative* or *-ive,* while B94 'applied' GS and SP2 to the ending *-ative* alone. Both interpretations proved to be rather successful, but my understanding of these constraints was closer to the general interpretation of them (i.e. that they work on the stem not only on the suffix).

I found that B94's theory can only account for the variants *émanatory, émanàtory,* if these items are treated as exceptional. Due to the heaviness of *-o-,* this syllable cannot be extrametrical and cannot yield a weak foot. I proposed that in British English the *-o-* of *-ory* should be analysed as weak rather than heavy, since it is always reduced and sometimes yields weak feet. This analysis correctly predicted the patterns *émanatory* = (é.ma.na)to.ry = (σLσ)WW and *émanàtory* = (σσ)(HW)W. Furthermore, I suggested that the complex ending *-atory,* which is composed of HWW in my analysis should have the following pre-determined parsings in British English: (a:.to)ry, as in (é.ma)(nà:.to)ry; a)tory, as in (é.ma.na)to.ry; (a:.to.ry), as in (è.ma)(ná:.to.ry). This last type of parsing gave rise to a new kind of ternary foot, namely (HWW), which is not discussed in B94. This has ideal weight as a foot and it can account for the stress pattern of words like *mànufácture* = (mà.nu)(fác.tu.re) = (σσ)(HWW). These examples were treated in B94 as exceptional in that primary stress fell on a rightmost weak foot in them, i.e. (mà.nu)(fác.tu)re = (σσ)(HW)W. My proposal that (HWW) should be enlisted in the inventory of possible foot types would make it possible to analyse these words in a regular manner.

11.3 General questions

I found that B94's foot inventory and predictions on parsing were generally correct. I proposed the following modifications to his Well-formedness constraints (5).

(5) **Modifications to Metrical Well-formedness**

(i) (HWW) should be listed in the inventory of possible feet (*mànufácture*)

(ii) the constraint *H(should be loosened (*co:àgulá:tion*)

As for B94's other constraints, the constraint for the Alignment of H syllables with stresses should be ranked relatively low (which is not contradictory to what B94 claims), because I found that (σLH) feet are quite numerous among words with the pattern #σ̀σσσ́. B94's claim that Stress Preservation overrides Strong Retraction and the constraint for Exhaustive Parse proved to be correct (cf. words with the pattern #σ̀σσσ́ and #σσ̀σσ). The existence of (σH_nσ) feet was confirmed, and the analysis of *-ative* words proved that these feet do not only occur in free stems. However, their occurrence is much rarer than that of (σLσ) feet, as the analysis of #σ̀σσσ́.. words showed.

11.4 Summary of novel scientific results

1. The influence of classical compound-initials on stressing can be reflected by assigning pre-determined structures to them in the form of a foot and a domain boundary, e.g. (he.te.ro)|.
2. The scope of Burzio (1994)'s Word-condition was extended to Type 1 classical compound-initials.
3. I redefined the meaning of Type 1 compound-initial: I treated all those words that had a free stem as the compound-final as Type 1 compounds. The adequacy of this treatment was confirmed by the data.
4. I assigned pre-determined structure to classical suffixes such as *-itis* in the form of a right boundary after the final null segment, i.e. *-i:tis* = i:.ti.sø).
5. (HWW) was proposed as a new foot in the inventory of possible feet to account for patterns like *èmaná:tory* = (è.ma)(ná:.to.ry).
6. It was suggested that syllables headed by a schwa should sometimes be analysed as W, especially in the British version of *-ory*.
7. Burzio (1994)'s account has been found an adequate device for describing stress patterns of English.

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APPENDICES

Appendix 1: Group I—Pattern 1

#ὸσσό

Suffixed / prefixed word				
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
1. (bè:au.ti.fi)(cá:.ti.o)nø			HLL	bé:autify:, atio)n
2. (cà.na)(lì:.ze)(á:.ti.o)nø	(cà.na.li)(zá:.ti.o)nø	(cà.na.li)(zá:.ti.o)nø	LLH / LLL	cánalì:ze, atio)n
3. (càn.ni.ba)(lís.ti.cø)			H_nLL	cánnibal, icø)
4. (cà.no)(nì:.ze)(á:.ti.o)nø	(cà.no.ni)(zá:.ti.o)nø	(cà.no.ni)(zá:.ti.o)nø	LLH / LLL	cánonì:ze, atio)n
5. (cà.pi.ta)(lís.ti.cø)			LLL	cápitalist, icø)
6. (cà:r.bo)(nì:.ze)(á:.ti.o)nø	(cà:r.bo.ni)(zá:.ti.o)nø	(cà:r.bo.ni)(zá:.ti.o)nø	HLL / HLH	cá:rbonì:ze, atio)nø
7. (cèn.tra)(lì:.ze)(á:.ti.o)nø	(cèn.tra.li)(zá:.ti.o)nø	(cèn.tra.li)(zá:.ti.o)nø	H_nLH / H_nLL	céntralì:ze, atio)nø
8. (cèn.tri.fug)(á:.ti.o)nø			H_nLH	céntrifu:ge, atio)nø
9. (**chà.rac**.**te**)(rís.ti.cø) *			LHL	cháracter, icø)
10. (cì.vi)(lì:.ze)(á:.ti.o)nø	(cì.vi.li)(zá:.ti.o)nø	(cì.vi.li)(zá:.ti.o)nø	LLH / LLL	cívilì:ze, atio)nø
11. (clà.ri.fi)(cá:.ti.o)nø			LLL	clárify:, atio)nø
12. (clàs.si.fi)(cá:.ti.o)nø			H_nLL	clássify:, atio)nø
13. (cò:.di.fi)(cá:.ti.o)nø			HLL	có:dify:, atio)nø
14. (cò.lo)(nì:.ze)(á:.ti.o)nø	(cò.lo.ni)(zá:.ti.o)nø	(cò.lo.ni)(zá:.ti.o)nø	LLH / LLL	cólonì:ze, atio)nø
15. (crỳs.tal)(lì:.ze)(á:.ti.o)nø	(crỳs.tal.li)(zá:.ti.o)nø	(crỳs.tal.li)(zá:.ti.o)nø	H_nH_nL / H_nH_nH	crýstallì:ze, atio)nø
16. (dì:.a.to)(má:.ce.ou)sø			HLL	B *Latin,* ou)sø
17. (dò.cu.men)(tá:.ti.o)nø		~	LLH_n	dócument ~, atio)nø
18. (drà.ma)(tì:.ze)(á:.ti.o)nø ^	(drà.ma.ti)(zá:.ti.o)nø	(drà.ma.ti)(zá:.ti.o)nø	LLH / LLL	drámatì:ze, d(rá:matì:ze, atio)nø
19. (è.le.e:)(mó.sy.na)ry	(èl.-.e:)(mó.sy.na)ry, (è.le.e:)(mó:.sy.na)ry	(è.le.-)(mó:.sy)(nà:ry	LLH / H_nLH / LLL	a)ry$_{Br}$, ary)$_{Am}$
20. (è:.ti.o)(lá:.ti.o)nø			HLL	é:tio(là:te, é:tio(là:te, atio)nø
21. (fà:l.si.fi)(cá:.ti.o)nø	(fàl.si.fi)(cá:.ti.o)nø		HLL / H_nLL	fá:lsify:, fálsify:, atio)nø
22. (fàn.fa.ro)(**ná:.de**)*	(fàn.fa.ro)(**ná:.de**)*		H_nLL	fánfa:r, (**á:de**)
23. (fè:r.ti)(lì:.ze)(á:.ti.o)nø	(fè:r.ti.li)(zá:.ti.o)nø	(fè:r.ti.li)(zá:.ti.o)nø	HLL / HLH	fé:rtilì:ze, atio)nø
24. (fò:r.ti.fi)(cá:.ti.o)nø			HLL	fó:rtify:, atio)nø
25. (fòs.si)(lì:.ze)(á:.ti.o)nø	(fòs.si.li)(zá:.ti.o)nø	(fòs.si.li)(zá:.ti.o)nø	H_nLH / H_nLL	fóssilì:ze, atio)nø
26. (frà.ter)(nì:.ze)(á:.ti.o)nø	(frà.ter.ni)(zá:.ti.o)nø	(frà.ter.ni)(zá:.ti.o)nø	LH_nH / LH_nL	fráternì:ze, atio)nø
27. (frùc.ti.fi)(cá:.ti.o)nø			HLL	frúctify:, atio)nø
28. (gà.si.fi)(cá:.ti.o)nø			LLL	gásify:, atio)nø
29. (gèn.tri.fi)(cá:.ti.o)nø			H_nLL	géntrify:, atio)nø
30. (glà.mo)(rì:.ze)(á:.ti.o)nø	(glà.mo.ri)(zá:.ti.o)nø	(glà.mo.ri)(zá:.ti.o)nø	LLH / LLL	glámorì:ze, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσό

Suffixed / prefixed word

British variant 1	British variants 2, 3	American	#σσσ	Stem, morphemes
31. (glò:.ri.fi)(cá:.ti.o)nø			HLL	gló:rify:, atio)nø
32. (glòt.ta)(lì:.ze)(á:.ti.o)nø	(glòt.ta.li)(zá:.ti.o)nø	(glò:t.ta.li)(zá:.ti.o)nø	HLL / HLH	glóttalì:ze) ~, atio)nø
33. (grà.ti.fi)(cá:.ti.o)nø			LLL	grátify:, atio)nø
34. (hà:r.le.qui)(**ná:.de**)*			HLL	há:rlequin, (**á:de**)
35. (hà:r.mo)(nì:.ze)(á:.ti.o)nø	(hà:r.mo.ni)(zá:.ti.o)nø	(hà:r.mo.ni)(zá:.ti.o)nø	HLL / HLH	há:rmonì:ze, atio)nø
36. (hù:.ma)(nì:.ze)(á:.ti.o)nø	(hù:.ma.ni)(zá:.ti.o)nø	(hù:.ma.ni)(zá:.ti.o)nø	HLL / HLH	húmanì:ze, atio)nø
37. (hỳ:.bri)(dì:.ze)(á:.ti.o)nø	(hỳ:.bri.di)(zá:.ti.o)nø	(hỳ:.bri.di)(zá:.ti.o)nø	HLL / HLH	hý:bridì:ze, atio)nø
38. (ì:.do)(lì:.ze)(á:.ti.o)nø	(ì:.do.li)(zá:.ti.o)nø	(ì:.do.li)(zá:.ti.o)nø	HLL / HLH	í:dolì:ze, atio)nø
39. (jòl.li.fi)(cá:.ti.o)nø		~	H_nLL	jóllify:, atio)nø
40. (jùs.ti.fi)(cá:.ti.o)nø			H_nLL	jústify:, atio)nø
41. (jùx.ta.po)(sí.ti.o)nø			HLL	(jùxta(pó:se, júxta(pò:se, júxta(pò:se$_{Am}$, io)nø
42. (lè:.ga)(lì:.ze)(á:.ti.o)nø	(lè:.ga.li)(zá:.ti.o)nø	(lè:.ga.li)(zá:.ti.o)nø	HLL / HLH	lé:galì:ze, atio)nø
43. (lèm.ma)(tì:.ze)(á:.ti.o)nø	(lèm.ma.ti)(zá:.ti.o)nø	(lèm.ma.ti)(zá:.ti.o)nø	H_nLH / H_nLL	lémmatì:ze, atio)nø
44. (lò:.ca)(lì:.ze)(á:.ti.o)nø	(lò:.ca.li)(zá:.ti.o)nø	(lò:.ca.li)(zá:.ti.o)nø	HLL / HLH	ló:calì:ze, atio)nø
45. (màg.ne)(tì:.ze)(á:.ti.o)nø	(màg.ne.ti)(zá:.ti.o)nø	(màg.ne.ti)(zá:.ti.o)nø	HLL / HLH	mágnetì:ze, atio)nø
46. (màg.ni.fi)(cá:.ti.o)nø			HLL	mágnify:, atio)nø
47. (mà.na.gea)(bí.li.ty)			LLL	mánageable
48. (mà.ni.fes)(tá:.ti.o)nø			LLH_n	mánifest, atio)nø
49. (màr.ria.gea)(bí.li.ty)			H_nLL	márriageable, ity)
50. (mà.the.ma)(tí.ci.a)nø			LLL	màthemátics, màth-mátics, a)nø
51. (mà.xi)(mì:.ze)(á:.ti.o)nø	(mà.xi.mi)(zá:.ti.o)nø	(mà.xi.mi)(zá:.ti.o)nø	HLL / HLH	máximì:ze, atio)nø
52. (mè.cha)(nì:.ze)(á:.ti.o)nø	(mè.cha.ni)(zá:.ti.o)nø	(mè.cha.ni)(zá:.ti.o)nø	LLH / LLL	méchanì:ze, atio)nø
53. (mì.li.ta)(rís.ti.cø)			LLL	mílitary, icø)
54. (mì.ni)(mì:.ze)(á:.ti.o)nø		(mì.ni.mi)(zá:.ti.o)nø	LLH / LLL	mínimì:ze, atio)nø
55. (ø.mìs)in.for(má:.ti.o)nø*			$H_nH_nH_n$	mìsinfórm, ìnformátion, (ø.mis)
56. (mò:.bi)(lì:.ze)(á:.ti.o)nø	(mò:.bi.li)(zá:.ti.o)nø	(mò:.bi.li)(zá:.ti.o)nø	HLL / HLH	mó:bilì:ze, atio)nø
57. (mò.der)(nì:.ze)(á:.ti.o)nø	(mò.der.ni)(zá:.ti.o)nø	(mò:.der.ni)(zá:.ti.o)nø	HH_nL / LH_nH / LH_nL	módernì:ze ~, atio)nø
58. (mò.di.fi)(cá:.ti.o)nø		~	LLL	módify:~, atio)nø
59. (mòl.li.fi)(cá:.ti.o)nø		~	H_nLL	móllify: ~, atio)nø
60. (mò:r.ti.fi)(cá:.ti.o)nø			HLL	mó:rtify:, atio)nø
61. (mùl.ti.pli)(cá:.ti.o)nø			H_nLL	múltiply:, atio)nø
62. (mùm.mi.fi)(cá:.ti.o)nø			H_nLL	múmmify:, atio)nø
63. (mỳs.ti.fi)(cá:.ti.o)nø			H_nLL	mýstify:, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word

British variant 1	British variants 2, 3	American	#σσσ	Stem, morphemes
64. (nà.vi.ga)(bí.li.ty)			LLL	návigable, ity)
65. (nè:u.tra)(lì:.ze)(á:.ti.o)nø	(nè:u.tra.li)(zá:.ti.o)nø	(nè:u.tra.li)(zá:.ti.o)nø	HLL / HLH	né:utralì:ze, atio)nø
66. (nò:r.ma)(lì:.ze)(á:.ti.o)nø	(nò:r.ma.li)(zá:.ti.o)nø	(nò:r.ma.li)(zá:.ti.o)nø	HLL / HLH	normalì:ze, atio)nø
67. (nò:.ti.fi)(cá:.ti.o)nø			HLL	nó:tify:, atio)nø
68. (nùl.li.fi)(cá:.ti.o)nø			H_nLL	núllify:, atio)nø
69. (òp.por.tu:)(nís.ti.cø)		~	HH_nH	òpprotú:nity), icø)
70. (òs.si.fi)(cá:.ti.o)nø		~	H_nLL	óssify:, atio)nø
71. (ò:.ver)|in(**dúl.ge**)*			HH_nH_n	indúlge, (ò:.ver)|
72. (ò:.ver)|pro:(téc.tø)			HH_nH	protéct ^, (ò:.ver)|
73. (ò:.ver)|re(ác.tø			HH_nL	reáct, (ò:.ver)|
74. (ò:.ver)|re(ác.ti.o)nø			HH_nL	(ò:.ver)|reáct
75. (ò:.ver)|su**b.s**(**crí:.be**)*			HH_nH	subscrí:be, (ò:.ver)|
76. (pà.ci.fi)(cá:.ti.o)nø			LLL	pácify:, atio)nø
77. (pà.la.ta)(bí.li.ty)			LLL	pálatable, ity)
78. (pà.ra.di)(sí:.a.ca)lø			LLL	pàradísiac, pàradisí:ac, a)lø
79. (pà:r.lia.men)(tá:.ri.a)nø		~	HLH_n	pá:rliament, a)nø
80. (pà:s.teu)(rì:.ze)(á:.ti.o)nø	(pàs.teu)(rì:.ze)(á:.ti.o)nø, (pà:s.teu.ri)(zá:.ti.o)nø	(pàs.teu.ri)(zá:.ti.o)nø	HLL / H_nLH / HLH / H_nLL	pá:steurì:ze, pásteurì:ze, pásteurì:ze$_{Am}$, atio)nø
81. (pà:u.pe)(rì:.ze)(á:.ti.o)nø	(pà:u.pe.ri)(zá:.ti.o)nø	(pà:u.pe.ri)(zá:.ti.o)nø	HLL / HLH	pá:uperì:ze, atio)nø
82. (pè:.na)(lì:.ze)(á:.ti.o)nø	(pè:.na.li)(zá:.ti.o)nø	(pè:.na.li)(zá:.ti.o)nø, (pè.na.li)(zá:.ti.o)nø	HLL / LLL / HLH	pé:nalì:ze, atio)nø
83. (pè.ne.tra)(bí.li.ty)			LLL	pénetrable, ity)
84. (pè.re.gri)(ná:.ti.o)nø			LLL	péregrinà:te, atio)nø
85. (pò:.la)(rì:.ze)(á:.ti.o)nø	(pò:.la.ri)(zá:.ti.o)nø	(pò:.la.ri)(zá:.ti.o)nø	HLL / HLH	pó:larì:ze, atio)nø
86. (pràc.ti.ca)(bí.li.ty)			HLL	prácticable, ity)
87. (près.su)(rì:.ze)(á:.ti.o)nø	(près.su.ri)(zá:.ti.o)nø	(près.su.ri)(zá:.ti.o)nø	H_nLH / H_nLL	préssurì:ze, atio)nø
88. (prò.ba.bi)(lís.ti.cø)			LLL	próbable, icø)
89. (pù:.ri.fi)(cá:.ti.o)nø			HLL	pú:rify:, atio)nø
90. (pù:.si.lla)(ní.mi.ty)	(pù:.sil.la)(ní.mi.ty)		HLL / HH_nL	B *Latin*, ity)
91. (quà.li.fi)(cá:.ti.o)nø		~	LLL	quálify: ~, atio)nø
92. (quàn.ti.fi)(cá:.ti.o)nø		~	H_nLL	quántify: ~, atio)nø
93. (rà.mi.fi)(cá:.ti.o)nø			LLL	rámify:, atio)nø
94. (rà.ti.fi)(cá:.ti.o)nø			LLL	rátify:, atio)nø
95. (rè.a)(lì:.ze)(á:.ti.o)nø	(rè.a.li)(zá:.ti.o)nø	(rè.a.li)(zá:.ti.o)nø	LLH / LLL	réalì:ze, atio)nø
96. (rè.com.men)(dá:.ti.o)nø	(rè.com.men)(dá:.ti.o)nø		LH_nH_n	rècomménd, atio)nø
97. (rè.cri.mi)(ná:.ti.o)nø ^+			LLL	recrímінà:te ^+, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word				
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
98. (rèc.ti.fi)(cá:.ti.o)nø			HLL	réctify:, atio)nø
99. (rè.gi.men)(tá:.ti.o)nø			LLH$_n$	régiment, régimènt, atio)nø
100.(rè.la.ti)(vís.ti.cø)			LLL	rélative, icø)
101.(rè.pre.sen)(tá:.ti.o)nø			LLH$_n$	rèpresént, atio)nø
102.(rò.do.mon)(**tá:.de**)*	(rò:do.mon)(tá:.de)	~	LH$_n$H / LLH$_n$	B *French,* (**a:de**)
103.(sà**nc.t**i.fi)(cá:.ti.o)nø*			HLL	sánctify:, atio)nø
104.(sè.di.men)(tá:.ti.o)nø	(sè.di.men)(tá:.ti.o)nø		LLH$_n$	sédiment, atio)nø
105.(sèn.si)(tì:.ze)(á:.ti.o)nø			H$_n$LH	sénsitì:ze, atio)nø
106.(sèn.ti.men)(tá.li.ty)	(sèn.ti.men)(tá.li.ty)	12	H$_n$LH$_n$	sèntiméntalø, ity)
107.(sè.pa.ra)(bí.li.ty)			LLL	séparable, ity)
108.(sìg.ni.fi)(cá:.ti.o)nø			HLL	sígnify:, atio)nø
109.(sìm.pli.fi)(cá:.ti.o)nø			H$_n$LL	símplify:, atio)nø
110.(sò.cia)(lì:.ze)(á:.ti.o)nø		~	LLH	sóciali:ze, atio)nø
111.(sò.lem)(nì:.ze)(á:.ti.o)nø		~	LH$_n$H	sólemnì:ze, atio)nø
112.(spè.cia)(lì:.ze)(á:.ti.o)nø	(spè.cia.li)(zá:.ti.o)nø	(spè.cia.li)(zá:.ti.o)nø	LLH / LLL	spéciali:ze, atio)nø
113.(spè.ci.fi)(cá:.ti.o)nø			LLL	spécify:, atio)nø
114.(stà.bi)(lì:.ze)(á:.ti.o)nø	(stà.bi.li)(zá:.ti.o)nø	(stà.bi.li)(zá:.ti.o)nø	LLH / LLL	stábilì:ze, atio)nø
115.(stàn.dar)(dì:.ze)(á:.ti.o)nø	(stàn.dar.di)(zá:.ti.o)nø	(stàn.dar.di)(zá:.ti.o)nø	H$_n$H$_n$L / H$_n$H$_n$H	standardì:ze, atio)nø
116.(stè.ri)(lì:.ze)(á:.ti.o)nø	(stè.ri.li)(zá:.ti.o)nø	(stè.ri.li)(zá:.ti.o)nø	LLH / LLL	stérilì:ze, atio)nø
117.(stùl.ti.fi)(cá:.ti.o)nø			H$_n$LL	stúltify:, atio)nø
118.(sùb.si)(dì:.ze)(á:.ti.o)nø	(sùb.si.di)(zá:.ti.o)nø	(sùb.si.di)(zá:.ti.o)nø	HLL / HLH	súbsidì:ze, átio)n, sub
119.(sỳm.bo)(lì:.ze)(á:.ti.o)nø	(sỳm.bo.li)(zá:.ti.o)nø	(sỳm.bo.li)(zá:.ti.o)nø	H$_n$LH / H$_n$LL	sýmbolì:ze, atio)nø
120.(sỳn.chro)(nì:.ze)(á:.ti.o)nø	(sỳn.chro.ni)(zá:.ti.o)nø	(sỳn.chro.ni)(zá:.ti.o)nø	H$_n$LH / H$_n$LL	sýnchronì:ze, atio)nø
121.(tè:r.gi.ve:r)(sá:.ti.o)nø	(tè:r.gi.ver)(sá:.ti.o)nø	te:r(gì.ver)(sá:.ti.o)nø 1	HLH$_{n\ /}$ HLH	té:rgive:rsà:te, té:rgiversà:te, te:r(gíversà:te$_{Am}$, té:rgive:rsà:te$_{Am}$, atio)nø
122.(ù:.ti)(lì:.ze)(á:.ti.o)nø	(ù:.ti.li)(zá:.ti.o)nø	(ù:.ti.li)(zá:.ti.o)nø	HLL / HLH	ú:tilì:ze, atio)nø
123.(ù.ni.fi)(cá:.ti.o)nø			LLL	ú:nify:, atio)nø
124.(ù.ni.ve:r)(sá.li.ty)			LLH	ùnivé:rsalø, ity)
125.(và.le.dic)(tó:.ri.a)nø			LLH	vàledíctory, a)nø
126.(và:.po)(rì:.ze)(á:.ti.o)nø	(và:.po.ri)(zá:.ti.o)nø	(và:.po.ri)(zá:.ti.o)nø	HLL / HLH	vá:porì:ze, atio)nø
127.(vè.ri.fi)(cá:.ti.o)nø			LLL	vérify:, atio)nø
128.(vè.ri.si)(míli)(tù:.de)			LLL	verisimilar, (tude)
129.(vè:r.si.fi)(cá:.ti.o)nø			HLL	vé:rsify:, atio)nø
130.(vìc.ti)(mì:.ze)(á:.ti.o)nø	(vìc.ti.mi)(zá:.ti.o)nø	(vìc.ti.mi)(zá:.ti.o)nø	HLL / HLH	víctimì:ze, atio)nø
131.(vì.li.fi)(cá:.ti.o)nø			LLL	vílify:, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word				
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
132.(vùl.ca)(nì:.ze)(á:.ti.o)nø	(vùl.ca.ni)(zá:.ti.o)nø	(vùl.ca.ni)(zá:.ti.o)nø	H$_n$LH / H$_n$LL	vúlcanì:ze, atio)nø
133.(vùl.ga)(rì:.ze)(á:.ti.o)nø	(vùl.ga.ri)(zá:.ti.o)nø	(vùl.ga.ri)(zá:.ti.o)nø	H$_n$LH / H$_n$LL	vúlgarì:ze, atio)nø
134.(vùl.ne.ra)(bí.li.ty)			H$_n$LL	vúlnerable, ity)
135.(wès.ter)(nì:.ze)(á:.ti.o)nø	(wès.ter.ni)(zá:.ti.o)nø	(wès.ter.ni)(zá:.ti.o)nø	H$_n$H$_n$L / H$_n$H$_n$H	wésternì:ze, atio)nø
136.(À.ris.to)(phá.ni.cø)	(À.ris.to)(phá.ni.cø)		LH$_n$L	N, Àristóphane:s ~, icø)
137.(À.ris.to)(té:.li.a)nø	(À.ris.to)(té:.li.a)nø, (À.ris.to)(té.li.a)nø		LH$_n$L	N, Áristotle ~, a)nø
138.(Fìn.lan)(dì:.ze)(á:.ti.o)nø	(Fìn.lan.di)(zá:.ti.o)nø	(Fìn.lan.di)(zá:.ti.o)nø	H$_n$H$_n$L / H$_n$H$_n$H	N, Fínland, atio)nø
139.(Pè.lo.pon)(né:.si.a)nø			LLH$_n$	N, Pélopon(nè:se, Pèlopon(né:se, a)nø
140.(tè:r.psi.cho)(ré:.a)nø	(tè:r.psi.cho)(ré:.a)nø, (tè:r.psi)(chó:.re.a)nø		HLL / HLH	N, Te:rp(síchore:, a)nø
141.(Sè.ne.ga)(**lé:.se**)*	(Sè.ne.ga:)(**lé:.se**)*		LLH / LLL	N, Sène(gá:l, (é:se)

Group I: Suffixed / prefixed			
#σσσ			
Alphabetical		Frequency	
LLL	41	HLL	42
LLH$_n$	7	LLL	41
LLH	17	H$_n$LL	27
LH$_n$L	4	HLH	25
LH$_n$H$_n$	1	LLH	17
LH$_n$H	4	H$_n$LH	12
LHL	1	LLH$_n$	7
H$_n$LL	27	LH$_n$L	4
H$_n$LH$_n$	1	LH$_n$H	4
H$_n$LH	12	H$_n$H$_n$L	4
H$_n$H$_n$L	4	H$_n$H$_n$H	4
H$_n$H$_n$H$_n$	1	HH$_n$L	4
H$_n$H$_n$H	4	HH$_n$H	3
HLL	42	HLH$_n$	2
HLH$_n$	2	LH$_n$H$_n$	1
HLH	25	H$_n$LH$_n$	1
HH$_n$L	4	H$_n$H$_n$H$_n$	1
HH$_n$H$_n$	1	HH$_n$H$_n$	1
HH$_n$H	3	**LHL**	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

<table>
<tr><td colspan="5">Classical Compound 1</td></tr>
<tr><td>British variant 1</td><td>British variants 2, 3</td><td>American</td><td>#σσσ</td><td>Stem, morphemes</td></tr>
<tr><td>1. (àn.te)|di(lú:.vi.a)nø</td><td>(àn.te)|di:(lú:.vi.a)nø</td><td></td><td>H_nLH / H_nLL</td><td>dilú:vian, (àn.te)|</td></tr>
<tr><td>2. (àn.te)|pe(núl.ti.ma)te</td><td>(àn.te)|pe(núl.ti.ma)te</td><td></td><td>H_nLL</td><td>penúltimate &, (àn.te)|</td></tr>
<tr><td>3. (àn.thro:.po:)|(cén.tri.cø)*</td><td></td><td>(àn.thro.po)|(cén.tri.cø)</td><td>H_nLL / H_nHH</td><td>céntric, (àn.thro:.po:)|</td></tr>
<tr><td>4. (àn.thro:.po:)|(mó:r.phi.cø)*</td><td></td><td>(àn.thro.po)|(mó:r.phi.cø)</td><td>H_nLL / H_nHH</td><td>mó:rphic, (àn.thro:.po:)|</td></tr>
<tr><td>5. (àn.thro:.po:)|(mó:r)(phìs.mø)*</td><td></td><td>(àn.thro.po)|(mó:r)(phìs.mø)*</td><td>H_nLL / H_nHH</td><td>mó:rphìsm, (àn.thro:.po:)|</td></tr>
<tr><td>6. (àn.ti)|bac(té:ri.a)lø</td><td></td><td>~ (àn.ti:)|bac(téria)lø</td><td>H_nLH / H_nHH</td><td>bacté:rial ~, (àn.ti)|</td></tr>
<tr><td>7. (àn.ti)|bal(lís.ti.cø)</td><td></td><td>1 (àn.ti:)|bal(lís.ti.cø)</td><td>H_nLH_n / H_nHH_n</td><td>ballístic, (àn.ti)|</td></tr>
<tr><td>8. (àn.ti)|bi:(ó.ti.cø)</td><td></td><td>~ (àn.ti:)|bi:(ó:.ti.cø)</td><td>H_nLH / H_nHH</td><td>bi:ótic ~, (àn.ti)|</td></tr>
<tr><td>9. (àn.ti)|cli:(má.ti.cø)</td><td>(àn.ti)cli:(má.ti.cø)</td><td>1 (àn.ti:)|cli:(má.ti.cø)</td><td>H_nLH / H_nHH</td><td>cli:mátic, (àn.ti)|</td></tr>
<tr><td>10. (àn.ti)|co:(á.gu.lan)tø</td><td></td><td>1 (àn.ti:)|co:(á.gu.lan)tø</td><td>H_nLH / H_nHH</td><td>co:águlant, (àn.ti)|</td></tr>
<tr><td>11. (àn.ti)|con(vúl.san)tø</td><td>(àn.ti)|con(vúl.san)tø +</td><td>1 (àn.ti:)|con(vúl.san)tø</td><td>H_nLH_n / H_nHH_n</td><td>convúlsant @+, (àn.ti)|</td></tr>
<tr><td>12. (àn.ti)|de(prés.san)tø</td><td>(àn.ti)|de:(prés.san)tø</td><td>1 (àn.ti:)|de(prés.san)tø</td><td>H_nHL / H_nLH / H_nLL</td><td>depréssant ^+, (àn.ti)|</td></tr>
<tr><td>13. (àn.ti)|ma(cás.sa)rø</td><td></td><td>1 (àn.ti:)|ma(cás.sa)rø</td><td>H_nHL / H_nLL</td><td>macássar, (àn.ti)|</td></tr>
<tr><td>14. (àn.ti)|mag(né.ti.cø)</td><td>(àn.ti)|mag(né.ti.cø)</td><td>1 (àn.ti:)|mag(né.ti.cø)</td><td>H_nLH / H_nHH</td><td>magnétic, (àn.ti)|</td></tr>
<tr><td>15. (àn.ti)|ma(lá:ri.a)lø</td><td></td><td>~ (àn.ti:)|ma(lária)lø</td><td>H_nHL / H_nLL</td><td>malá:rial ~, (àn.ti)|</td></tr>
<tr><td>16. (àn.ti)|py:(rá.ti.cø)</td><td></td><td>1 (àn.ti:)|py:(rá.ti.cø)</td><td>H_nLH / H_nHH</td><td>py:rátic, (àn.ti)|</td></tr>
<tr><td>17. (àn.ti)|sco:(bú:.ti.cø)</td><td></td><td>1 (àn.ti:)|sco:(bú:.ti.cø)</td><td>H_nLH / H_nHH</td><td>sco:bú:tic, (àn.ti)|</td></tr>
<tr><td>18. (àn.ti)|-Se(mí.ti.cø)</td><td></td><td>1 (àn.ti:)|-Se(mí.ti.cø)</td><td>H_nHL / H_nLL</td><td>Semític, (àn.ti)|</td></tr>
<tr><td>19. (àn.ti)|spas(mó.di.cø)</td><td></td><td>~ (àn.ti:)|spas(mó:.di.cø)</td><td>H_nLH_n / H_nHH_n</td><td>spasmódic~, (àn.ti)|</td></tr>
<tr><td>20. (à.qua)|ma(rí:.ne)*</td><td></td><td></td><td>LLL</td><td>marí:ne, (à.qua)|</td></tr>
<tr><td>21. (à:r.chi)|pho(né:.mi.cø)</td><td></td><td></td><td>HLL</td><td>phoné:mic, (à:r.chi)|</td></tr>
<tr><td>22. (à:r.chi)|tec(tó.ni.cø)</td><td></td><td></td><td>HLH</td><td>tectónic ~, (à:r.chi)|</td></tr>
<tr><td>23. (Àsco:)|my:(cé:.te:)sø</td><td>(Às.co)|my:(cé:.te:)sø</td><td></td><td>HHH / H_nLH</td><td>mycétes, (Àsco:)|</td></tr>
<tr><td>24. (à:u.to:)|bi:(óg.ra.phe)rø</td><td></td><td>~</td><td>HHH</td><td>bi:ógrapher, (à:u.to:)|</td></tr>
<tr><td>25. (à:u.to:)|bi:(óg.ra.phy)</td><td></td><td>~</td><td>HHH</td><td>bi:ógraphy, (à:u.to:)|</td></tr>
<tr><td>26. (à:u.to:)|des(trúc.tø)*</td><td></td><td></td><td>HHH_n</td><td>destrúct, (à:u.to:)|</td></tr>
<tr><td>27. (à:u.to:)|e(ró.ti)(cìs.mø)</td><td></td><td>~</td><td>HHL</td><td>eróticìsm, (à:u.to:)|</td></tr>
<tr><td>28. (à:u.to:)|-im(mú:.ne)*</td><td></td><td></td><td>HHH_n</td><td>immú:ne, (à:u.to:)|</td></tr>
<tr><td>29. (à:u.to:)|seg(mén.ta)lø</td><td>(à:u.to)|seg(mén.ta)lø</td><td></td><td>HHH / HLH</td><td>segméntal, (à:u.to:)|</td></tr>
<tr><td>30. (à:u.to:)|sug(gés.ti.o)nø</td><td></td><td></td><td>HHH</td><td>suggéstion, (à:u.to:)|</td></tr>
<tr><td>31. (bà.thy)|pe(lá.gi.cø)</td><td></td><td></td><td>LLL</td><td>pelágic, (bà.thy)|</td></tr>
<tr><td>32. (bèn.zo:)|di:(á:.ze.pi:)ne</td><td>(bèn.zo:)|di:(á:.ze.pi:)ne,
(bèn.zo:)|d-(á:.ze.pi:)ne</td><td></td><td>H_nHH / H_nHL</td><td>di:-á:z-epi:ne, (bèn.zo:)|</td></tr>
<tr><td>33. (bì:.o:)|de(grá:.da.ble)</td><td></td><td></td><td>HHL</td><td>degrá:dable, (bì:.o:)|</td></tr>
<tr><td>34. (cì:r.cum)|lo(cú:.ti.o)nø</td><td></td><td></td><td>HH_nL</td><td>locú:tion, (cì:r.cum)|</td></tr>
<tr><td>35. (còn.tra)|dis(tín.c.ti.o)nø</td><td></td><td>~</td><td>H_nLH_n</td><td>distínction, (còn.tra)|</td></tr>
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<tr><td>37. (cò:un.ter)|in(sú:r.gen)cy</td><td></td><td></td><td>$H_nH_nH_n$</td><td>insú:rgency, (cò:un.ter)|</td></tr>
<tr><td>38. (cù:.mu.lo:)|(ním.bu.sø)</td><td></td><td></td><td>HLH</td><td>nímbus, (cù:.mu.lo:)|</td></tr>
<tr><td>39. (cù:.mu.lo:)|øs(trá:.tu.sø)</td><td></td><td></td><td>HLH</td><td>strá:tus, (cù:.mu.lo:)|</td></tr>
<tr><td>40. (dè.ca)|syl(lá.bi.cø)</td><td></td><td></td><td>LLH_n</td><td>syllábic, (dè.ca)|</td></tr>
<tr><td>41. (dì:.a)|mag(né.ti.cø)</td><td>(dì:.a)|mag(né.ti.cø)</td><td></td><td>HLH</td><td>magnétic, (dì:.a)|</td></tr>
<tr><td>42. (dì:.a)|no:(é.ti.cø)</td><td></td><td></td><td>HLH</td><td>no:étic, (dì:.a)|</td></tr>
<tr><td>43. (dì:.a)|pho:(né:.mi.cø)</td><td></td><td></td><td>HLH</td><td>pho:né:mic, (dì:.a)|</td></tr>
<tr><td>44. (dì:.a)|pho(ré:.si.sø)</td><td></td><td></td><td>HLL</td><td>phoré:sis, (dì:.a)|</td></tr>
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<tr><td>52. (èx.tra)|ga(lác.ti.cø)</td><td></td><td></td><td>HLL</td><td>galáctic, (èx.tra)|</td></tr>
<tr><td>53. (èx.tra)|ju(dí.ci.a)lø</td><td></td><td></td><td>HLL</td><td>judícial, (èx.tra)|</td></tr>
<tr><td>54. (èx.tra)|po(sí.ti.o)nø</td><td></td><td></td><td>HLL</td><td>èxtrapó:se, posítion, (èx.tra)|</td></tr>
<tr><td>55. (èx.tra)|ter(rés.tria)lø</td><td>(èx.tra)|ter(rés.tri.a)lø</td><td></td><td>HLH_n</td><td>terréstrial, (èx.tra)|</td></tr>
<tr><td>56. (gè.ni.to:)|(ú:.ri.na)ry</td><td></td><td>(gè.ni.to:)(ú.ri)(nà:.ry)</td><td>LLH</td><td>ú:rinary ~, (gè.ni.to:)|</td></tr>
<tr><td>57. (gè:.o:)|po(lí.ti.ca)lø</td><td></td><td>~</td><td>HHL</td><td>ical, (gè:.o:)|</td></tr>
<tr><td>58. (glòt.to:)|chro(nó.lo.gy)</td><td></td><td>~</td><td>HHL</td><td>chronólogy, (glòt.to:)|</td></tr>
<tr><td>59. (hè.te.ro:)|(cý:c.li.cø)</td><td>(hè.te.ro:)|(cýc.li.cø)</td><td>~</td><td>LLH</td><td>cýclic ^, (hè.te.ro:)|</td></tr>
<tr><td>60. (hè.te.ro:)|r(gá.ni.cø)*</td><td></td><td>~</td><td>LLH</td><td>o:rgánic, (hè.te.ro:)|</td></tr>
<tr><td>61. (hè.te.ro:)|(séx)(ìs.mø)*</td><td></td><td></td><td>LLH</td><td>séxìsm, (hè.te.ro:)|</td></tr>
<tr><td>62. (hè.te.ro:)|(sé.xis)tø</td><td></td><td></td><td>LLH</td><td>séxist, (hè.te.ro:)|</td></tr>
<tr><td>63. (hè.te.ro:)|(sé.xu.a)lø</td><td></td><td></td><td>LLH</td><td>séxual, (hè.te.ro:)|</td></tr>
<tr><td>64. (hò:.me.o:)|(mó:r)(phìs.mø)*</td><td></td><td>~</td><td>HLH</td><td>mó:rphìsm, (hò:.me.o:)|</td></tr>
<tr><td>65. (hò:.me.o:)|øs(tá.ti.cø)</td><td></td><td>~</td><td>HLH</td><td>státic, (hò:.me.o:)|</td></tr>
<tr><td>66. (hò:.mo:)|e(ró.ti.cø)</td><td>(hò.mo:)|e(ró.ti.cø)</td><td>~</td><td>LHL / HHL</td><td>erótic, (hò:.mo:)|</td></tr>
<tr><td>67. (hò:.mo:)|e(ró.ti)(cìs.mø)</td><td>(hò.mo:)|e(ró.ti)(cìs.mø)</td><td>~</td><td>LHL / HHL</td><td>eróticìsm, (hò:.mo:)|</td></tr>
<tr><td>68. (hỳ:dro:)|dy:(ná.mi.cø)</td><td>(hỳ:.dro:)|dy(ná.mi.cø)</td><td>~</td><td>HHL</td><td>dy:námic, dynámic, (hỳ:dro:)|</td></tr>
<tr><td>69. (hỳ:dro:)|e(léc.tri.cø)</td><td></td><td></td><td>HLH</td><td>eléctric, (hỳ:dro:)|</td></tr>
<tr><td>70. (hỳ:per)|py:(ré.xi.a)</td><td></td><td></td><td>H_nHH</td><td>py:réxia, (hỳ:per)|</td></tr>
<tr><td>71. (hỳ:per)|a(cí.di.ty)</td><td>(hỳ:per)|a(cí.di.ty)</td><td></td><td>H_nLL</td><td>acídity, (hỳ:per)|</td></tr>
<tr><td>72. (hỳ:per)|ac(tí.vi.ty)</td><td></td><td></td><td>H_nHL</td><td>actívity, (hỳ:per)|</td></tr>
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<tr><td>74. (hỳ:per)|cor(réc.ti.o)nø</td><td></td><td></td><td>H_nH_nH</td><td>corréction, (hỳ:per)|</td></tr>
<tr><td>75. (hỳ:per)|gly:(cé:mia</td><td></td><td></td><td>H_nH</td><td>gly:cé:mia, (hỳ:per)|</td></tr>
<tr><td>76. (hỳ:per)|pi(tú:.i.ta)(rìs.mø)</td><td></td><td></td><td>H_nLH</td><td>pitú:itarìsm, (hỳ:per)|</td></tr>
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<tr><td>78. (ì.di.o:)|(sýn.cra)sy</td><td></td><td></td><td>LLH</td><td>sýncrasy, (ì.di.o:)|</td></tr>
<tr><td>79. (là:.bi.o:)|(dén.ta)lø</td><td></td><td></td><td>HLH</td><td>déntal, (là:.bi.o:)|</td></tr>
<tr><td>80. (là:.bi.o:)|(pá.la.ta)lø</td><td></td><td></td><td>HLH</td><td>pálatal, (là:.bi.o:)|</td></tr>
<tr><td>81. (là:.bi.o:)|(vé:.la)rø</td><td></td><td></td><td>HLH</td><td>vé:lar, (là:.bi.o:)|</td></tr>
<tr><td>82. (là:.bi.o:)|(vé:.la)(rì:.ze)</td><td></td><td></td><td>HLH</td><td>vé:larì:ze, (là:.bi.o:)|</td></tr>
<tr><td>83. (mà.cro:)|bi:(ó.ti.cø)</td><td></td><td></td><td>LHH</td><td>biótic, (mà.cro:)|</td></tr>
<tr><td>84. (mà.cro:)|cli:(má.ti.cø)</td><td></td><td></td><td>LHH</td><td>climátic, (mà.cro:)|</td></tr>
<tr><td>85. (mè.ga.lo)|(má:.ni.a)</td><td></td><td></td><td>LLL</td><td>má:nia, (mè.ga.lo)|</td></tr>
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<tr><th>British variant 1</th><th>British variants 2, 3</th><th>American</th><th>#σσσ</th><th>Stem, morphemes</th></tr>
<tr><td>111.(phỳ.si.o:)|(thé.ra.py)</td><td></td><td></td><td>LLH</td><td>thérapy, (phỳ.si.o:)|</td></tr>
<tr><td>112.(phỳ.to:)|pa(thó.lo.gy)</td><td></td><td>~</td><td>LHL</td><td>pathólogy, (phỳ.to:)|</td></tr>
<tr><td>113.(plè.ni)|po(tén.ti.a)ry</td><td></td><td>1 (plè.ni)|po(tén.ti)(à:.ry)</td><td>LLL</td><td>poténtiary, (plè.ni)|</td></tr>
<tr><td>114.(pò.ly)|syl(lá.bi.cø)</td><td></td><td></td><td>LLH_n</td><td>syllábic, (pò.ly)|</td></tr>
<tr><td>115.(pò.ly)|un(sátu(rà:ted</td><td></td><td>~</td><td>LLH_n</td><td>unsáturà:ted, (pò.ly)|</td></tr>
<tr><td>116.(prò:.to:)|zo:(ó.lo.gy)</td><td></td><td>(prò:.to)|zo:(ó:.lo.gy)</td><td>HHH / HLH</td><td>zo:ólogy, (prò:.to:)|</td></tr>
<tr><td>117.(psỳ:.cho:)|a(có:us.ti.cø)</td><td></td><td></td><td>HHL</td><td>acó:ustic, (psỳ:.cho:)|</td></tr>
<tr><td>118.(psỳ:.cho:)|a(ná.ly.si)sø</td><td></td><td></td><td>HHL</td><td>análysis, (psỳ:.cho:)|</td></tr>
<tr><td>119.(psỳ:.cho:)|ki:(né:.si.sø)</td><td></td><td></td><td>HHH</td><td>ki:né:sis, (psỳ:.cho:)|</td></tr>
<tr><td>120.(psỳ:.cho:)|ki:(né.ti.cø)</td><td></td><td></td><td>HHH</td><td>ki:nétic, (psỳ:.cho:)|</td></tr>
<tr><td>121.(phỳ:.co:)|my(cé:.tou)sø</td><td></td><td></td><td>HHL</td><td>my:ce:te, ous, (phỳ:.co:)|</td></tr>
<tr><td>122.(psỳ:.cho:)|pa(thó.lo.gy)</td><td></td><td>~</td><td>HHL</td><td>pathólogy, (psỳ:.cho:)|</td></tr>
<tr><td>123.(psỳ:.cho:)|so:(má.ti.cø)</td><td></td><td></td><td>HHH</td><td>so:mátic, (psỳ:.cho:)|</td></tr>
<tr><td>124.(quà.ter)|cen(té:.na)ry</td><td>(quà:.ter)|cen(té:.na)ry,
(quà.ter)|cen(té.na)ry</td><td>(quà.ter)|cen(té.na.ry),
(quà.ter)|(cén.te)(nà:.ry)</td><td>LH_nH_n / HH_nH_n</td><td>centé:nary, (quà.ter)|</td></tr>
<tr><td>125.(rò:.to:)|gra(vú:.re)*</td><td></td><td>~</td><td>HHL</td><td>gravú:re, (rò:.to:)|</td></tr>
<tr><td>126.(sè.mi)|con(dúc.to)rø</td><td>(sè.mi)|con(dúc.to)rø</td><td></td><td>LLH_n</td><td>condúctor ^, (sè.mi)|</td></tr>
<tr><td>127.(sè.mi)|de(tá.che.dø)</td><td>(sè.mi)|de:(tá.che.dø) +</td><td></td><td>LLH / LLL</td><td>detáched ^, (sè.mi)|</td></tr>
<tr><td>128.(sè.mi)|pro(fés.sio.na)lø</td><td></td><td></td><td>LLL</td><td>proféssional, (sè.mi)|</td></tr>
<tr><td>129.(sè:.ro:)|con(vér.tø)*</td><td></td><td></td><td>HHH_n</td><td>convért, (sè:.ro:)|</td></tr>
<tr><td>130.(sès.qui)|cen(tén.ni.a)lø</td><td></td><td></td><td>H_nLH_n</td><td>centénnial, (sès.qui)|</td></tr>
<tr><td>131.(sès.qui)|pe(dá:.li.a)nø</td><td></td><td></td><td>H_nLL</td><td>pedá:lian, (sès.qui)|</td></tr>
<tr><td>132.(sò:.ci.o)|(lín.guis)tø</td><td></td><td>~</td><td>HLL</td><td>línguist, (sò:.ci.o)|</td></tr>
<tr><td>133.(stè.ri.o)|(phó.ni.cø)</td><td>(stè.ri.o:)|(phó.ni.cø)</td><td>~</td><td>LLH / LLL</td><td>phónic, (stè.ri.o)|</td></tr>
<tr><td>134.(stè.ri.o)|øs(có.pi.cø)</td><td>(stè.ri.o:)|øs(có.pi.cø)</td><td>~</td><td>LLH / LLL</td><td>scópic, (stè.ri.o)|</td></tr>
<tr><td>135.(stè.ri.o)|(tí.pi.ca)lø</td><td>(stè.ri.o:)|(tí.pi.ca)lø</td><td>~</td><td>LLH / LLL</td><td>típical, (stè.ri.o)|</td></tr>
<tr><td>136.(sù:.per)|a(bún.dan)ce</td><td></td><td></td><td>HH_nL</td><td>abúndance, (sù:.per)|</td></tr>
<tr><td>137.(sù:.per)|con(dúc.ti.o)nø</td><td></td><td></td><td>HH_nH_n</td><td>condúction, (sù:.per)|</td></tr>
<tr><td>138.(sù:.per)|con(dúc.to)rø</td><td></td><td></td><td>HH_nH_n</td><td>condúctor, (sù:.per)|</td></tr>
<tr><td>139.(sù:.per)|im(pó:.se)*</td><td></td><td></td><td>HH_nH_n</td><td>impó:se, (sù:.per)|</td></tr>
<tr><td>140.(sù:.per)|vi:(sé:e.ø)*</td><td></td><td></td><td>HH_nH</td><td>sù:pervi:se, (sù:.per)|</td></tr>
<tr><td>141.(sù:.per)|in(tén.dø)*</td><td></td><td></td><td>HH_nH_n</td><td>inténd, (sù:.per)|</td></tr>
<tr><td>142.(sù:.per)|in(tén.den)tø</td><td></td><td></td><td>HH_nH_n</td><td>inténdent, (sù:.per)|</td></tr>
<tr><td>143.(tè.le)|ki:(né:.si.sø)</td><td></td><td></td><td>LLH</td><td>ki:né:sis, (tè.le)|</td></tr>
<tr><td>144.(tè.le)|pho(tó.gra.phy)</td><td></td><td>~</td><td>LLL</td><td>photógraphy, (tè.le)|</td></tr>
<tr><td>145.(thè:r.mo:)|dy:(ná.mi.cø)</td><td></td><td></td><td>HHH</td><td>dy:námic, (thè:r.mo:)|</td></tr>
<tr><td>146.(thè:r.mo:)|e(léc.tri.cø)</td><td></td><td></td><td>HHL</td><td>eléctric, (thè:r.mo:)|</td></tr>
<tr><td>147.(tò.xo:)|ca(rí:.a.si)sø</td><td></td><td>~</td><td>HHL</td><td>carí:asis, (tò.xo:)|</td></tr>
</table>

<table>
<tr><td>á</td><td>primary stressed vowel</td><td>ø</td><td>null segment</td><td>L, H</td><td>light syllable, heavy syllable</td></tr>
<tr><td>à</td><td>secondary stressed vowel</td><td>@</td><td>optional secondary stress on the 1st σ</td><td>H_n</td><td>CVC ending in *s* or sonorant</td></tr>
<tr><td>a</td><td>full vowel in unstressed σ</td><td>&</td><td>optinal full (&), long (^) vowel in the 1st σ</td><td>B, N</td><td>bound stem, name</td></tr>
<tr><td>a:</td><td>long vowel</td><td>+</td><td>dialectal</td><td>?</td><td>questionable analysis</td></tr>
<tr><td>-</td><td>syncope</td><td>~</td><td>regular sound change in AmE</td><td>!</td><td>problematic word (stem)</td></tr>
<tr><td>( )</td><td>foot boundaries</td><td>ab</td><td>problematic / exceptional for B94</td><td>italics</td><td>stress-preserving (Group IV)</td></tr>
<tr><td>.</td><td>syllable boundary</td><td>*</td><td>problematic word for my analysis</td><td>‖</td><td>both CC1 and CC2 analysis</td></tr>
<tr><td>|</td><td>domain boundary</td><td>1, 2</td><td>1st / 2nd BrE variant appears in AmE</td><td>< ></td><td>Group V variant with #σσσσ́</td></tr>
</table>

Classical Compound 1				
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
148.(**tò.xo:**)|**plas**(mó:.si.sø)		~	HHH_n	plasmó:sis, (tò.xo:)|
149.(ùl.tra)|ma(**rí:.ne**)*			H_nLL	marí:ne, (ùl.tra)|
150.(**và:.so:**)|**con.s**(tríc.ti.o)nø			HHH_n	constríction, (và:.so:)|
151.(**và:.so:**)|**con.s**(tríc.to)rø			HHH_n	constríctor, (và:.so:)|

Group I: Classical compound 1			
#σσσ			
Alphabetical		Frequency	
LLL	12	HHL	18
LLH_n	4	HLH	17
LLH	15	LLH	15
LH_nH_n	1	HLL	14
LHL	6	H_nHH	13
LHH_n	2	LLL	12
LHH	5	H_nLL	12
H_nLL	12	HHH	12
H_nLH_n	6	H_nLH	11
H_nLH	11	HHH_n	10
$H_nH_nH_n$	1	LHL	6
H_nH_nH	2	H_nLH_n	6
H_nHL	5	HH_nH_n	6
H_nHH_n	3	LHH	5
H_nHH	13	H_nHL	5
H_nH	1	LLH_n	4
HLL	14	H_nHH_n	3
HLH_n	3	HLH_n	3
HLH	17	LHH_n	2
HH_nL	2	H_nH_nH	2
HH_nH_n	6	HH_nL	2
HH_nH	1	LH_nH_n	1
HHL	18	$H_nH_nH_n$	1
HHH_n	10	H_nH	1
HHH	12	HH_nH	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσ́

Classical Compound 2				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
1. (càl.ce.o)(lá:.ri.a)		~	H_nLL	aria)
2. (cì.ne.ma)(tó.gra.phy)		~	LLL	graphy)
3. (crì.mi.no)(ló.gi.ca)lø		~	LLL	ólogy) ~, ica)lø
4. (dò.li.cho:)(sá:u.ru.sø)		~	LLH	sá:urø), sá:urusø)
5. (è.le.phan)(tí:.a.si)sø	(è.le.phan)(tí:.a.si)sø		LLH_n	élephant, iasi)sø
6. (èn.ne.a)(hé:.dro.nø)	(èn.ne.a)(hé.dro.nø)		H_nLL	he:dronø)
7. (è.pi.tha)(lá:.mi.u)mø			LLL	thalamusø)
8. (è:ti.o)(ló.gi.ca)lø		~	LLL	ólogy), ica)lϕ
9. (gỳ.ne.co)(ló.gi.ca)lø		~	LLL	cólogy), ica)lϕ
10. (hè.te.ro:)(gé:ne.ou)sø		~	LLH	gene), ou)sø, (hetero:)
11. (hò:.me.o)(pá..thi.cø)		~	HLL	hò:meópathy, icø)
12. (**hò.mo:.ge**)(né:.i.ty)*			LHL	hómo(gè:ne, ity)
13. (ìch.ty.o)(phó:.bi.a)	(ìch.ty.o:)(phó:.bi.a)	12	HLL / HLH	phó:bia)
14. (ìch.ty.o)(ló.gi.ca)lø	(ìch.ty.o:)(ló.gi.ca)lø	1 ~ 2 ~	HLL / HLH	ólogy) ~, ica)lϕ
15. (ìch.ty.o)(sá:u.ru.sø)			HLL	sá:urø), sá:urusø)
16. (ì.de.o)(grá..phi.cø) ^	(ì.de.o:)(grá.phi.cø)		LLH / LLL	gráphø), icø)
17. (ì.di.o:)(glós.si.a)		~	LLH	ia)
18. (ì.di.o)(léc.ta)lø	(ì.di.o:)(léc.ta)lø		LLH / LLL	lectø), a)lø
19. (ì.di.o)(má.ti.cø)	(ì.di.o:)(má.ti.cø)		LLH / LLL	icø)
20. (mè.mo.ra)(bí.li.a)	(mè.mo.ra)(bí:.li.a)		LLL	ia)
21. (mè.ri.to:)(crá.ti.cø)			LLH	crattø), icø)
22. (mè:.te.o)(ró.lo.gy)		~	HLL	ology)
23. (mè.tho.do)(ló.gi.ca)lø		~	LLL	ology), icø) , a)lø
24. (mỳ.xo.ma)(tó:.si.sø)			HLL	osisø)
25. (nò:.na.ge)(ná:.ri.a)nø	(nò.na.ge)(ná:.ri.a)nø		HLL / LLL	a)nø
26. (**òc.to:.ge**)(ná:.ri.a)nø*		~	HHL	a)nø, ?(octo)|
27. (òs.te.o:)(pá.thi.cø)		~	H_nLH	icø)
28. (pà.la.to:)(grá..phi.cø)			LLH	icø)
29. (Pà.le.o:)(lí..thi.cø)	(Pà:.le.o:)(lí.thi.cø)	2	LLH / HLH	icø)
30. (pà.le.on)(tó.lo.gis)tø ^		~	LLH_n	ólogy), is)tø
31. (pà.ra.pher)(ná:.li.a)		~	LLH_n	ia)
32. (pè.ri.o)(dón.ta)lø		~	LLL	a)lø
33. (pè.ri.pe)(té:i.a)			LLL	ia)
34. (pè.ri.to:)(né:.u.mø)			LLH	?
35. (pè.ri.to:)(ní:.ti.sø)			LLH	itisø)
36. (phàn.tas.ma)(gó:.ri.a)			H_nH_nL	ia)
37. (phà:r.ma.co)(poé:.i.a)			HLL	ia)
38. (phà:r.ma.co)(ló.gi.ca)lø			HLL	cólogy), ica)lø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσ́

Classical Compound 2				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
39. (phrà:.se.o)(ló.gi.ca)lø		~	HLL	ólogy) ~, ica)lø
40. (phỳ.si.o)(ló.gi.ca)lø		~	LLL	ólogy) ~, ica)lø
41. (plè:.si.o)(sá:u.ru.sø)			HLL	sá:urø), sá:uru)sø
42. (sè.xa.ge)(ná:.ri.a)nø			HLL	se(xágenary**,** a)nø
43. øs(tè:.a.t<u>o</u>:)(pý:.gi.a)		ste(à.to)(pý:gi.a), øs(tè:.a.to)(pý:.gi.a)	HLL / LLL / HLH	ia)
44. øs(tè:.a.t<u>o</u>:)(pý:gou)sø		ste(à.to)(pý:gou)sø, øs(tè:.a.to)(pý:.gou)sø, øs(tè:.a)(tó:.py.gou)sø	HLL / LLL / HLH	(stè:at<u>o</u>:(pý:gia, st(eàto(pý:gia$_{Am}$, s(tè:ato(pý:gia$_{Am}$, ou)sø
45. øs(tè:.a.tor)(rhé:.a)		ste(à.tor)rhé:.a), øs(tè:.a.tor)(rhé:.a)	HLH$_n$ / LLH$_n$	rrhe:a)
46. (sò:.ci.<u>o</u>)(ló.gi.ca)lø		~	HLL	ólogy) ~, ica)lø
47. (spè:.le.o)(ló.gi.ca)lø			HLL	ólogy), ica)lø
48. (tè:.le.o)(ló.gi.ca)lø		~	HLL	ólogy), ica)lø
49. (tè.le.gr<u>a</u>:)(**phé:.se**)*	(tè.le.gra)(**phé:.se**)*		LLH / LLL	gra:phø), **é:se**
50. (tè:r.mi.no)(ló.gi.ca)lø		~	HLL	ólogy), ica)lø
51. (tò.xi.c<u>o</u>:)(ló.gi.ca)lø		~	HLH	ólogy), ica)lø

Group I: Classical compound 2			
#σσσ			
Alphabetical		**Frequency**	
LLL	17	HLL	18
LLH$_n$	4	LLL	17
LLH	12	LLH	12
LHL	1	HLH	6
H$_n$LL	2	LLH$_n$	4
H$_n$LH	1	H$_n$LL	2
H$_n$H$_n$L	1	LHL	1
HLL	18	H$_n$LH	1
HLH$_n$	1	H$_n$H$_n$L	1
HLH	6	HLH$_n$	1
HHL	1	HHL	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
<u>a</u>	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Monomorphemic word					
British variant 1	**British variant 2**	**Other British variants**	**American**	**#σσσ**	**Stem**
1. (à.bra.ca)(dá.bra)				LLL	*unknown*
2. (à.sa.ra)(bác.ca)				LLL	*Greek*
3. (cò.lo.ra)(tú:.ra)				LLL	*Italian*
4. (dè.li.ca)(tés.se.nø)				LLL	*Greek*
5. (è.li.c<u>a</u>m)(**pá:.ne**)*				LLH$_n$	*Latin*
6. (lè.ger.de)(má:.i.nø)			~	LH$_n$L	*French*
7. (mà.de.moi)(**sél.le**)*	(màd-moi)(**sél.le**)*			LLL / LH$_n$L	*French*
8. (mùl.li.ga)(**tá:w.ny**)*				H$_n$LL	*Tamil*
9. (rè.ci.ta)(**tí:.ve**)*				LLL	*Italian*
10. (rès.tau.ra)(**té:u.rø**)*	(rès.t<u>au</u>.ra)(**té:u.rø**)*			H$_n$LL	*French*
11. (tè.le.phe)(**rí:.que**)*				LLL	*French*
12. (tsù:.tsu.ga)(**mú:.shi**)*		(**tsù:.ts<u>u:</u>.ga**)(mú:.shi)*, (tsù:.tsu.ga)(mú.shi)		HLL / HHL	*Japanese*
13. (Àl.la.ha)(**bá:.dø**)*				H$_n$LL	*N Hindi*
14. (À.ri.ma)(thé:.a)				LLL	N
15. (Èl.e.a)(nó:.ra)				H$_n$LL	N
16. (Hà.li.c<u>a</u>:r)(nás.u)sø			~	LLH	N
17. (Hè:r.ze.g<u>o</u>:)(ví:.na)			~	HLH	N
18. (Mè.di.ter)(rá:.ne.a)nø				LLH$_n$	*N Latin,* a)nø
19. (Nè.bu.chad)(néz.za.rø)				LLH	N
20. (Sà.vo.na)(ró:.la)				LLL	N
21. (Sèp.tu.a)(gé.si.ma)				HLL	N
22. (Vàl.p<u>o</u>.li)(cél.la) ^				H$_n$LL	N
23. (Wìn.ni.pe)(gó:.si.sø)				H$_n$LL	N, osis)

Group I: Monomorphemic			
#σσσ			
Alphabetical		**Frequency**	
LLL	9	LLL	9
LLH$_n$	2	H$_n$LL	6
LLH	2	LLH$_n$	2
LH$_n$L	2	LLH	2
H$_n$LL	6	LH$_n$L	2
HLL	2	HLL	2
HLH	1	HLH	1
HHL	1	HHL	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
<u>a</u>	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group I: Summary			
#σσσ			
Alphabetical		Frequency	
LLL	79	LLL	79
LLH$_n$	17	HLL	76
LLH	46	HLH	49
LH$_n$L	6	H$_n$LL	47
LH$_n$H$_n$	2	LLH	46
LH$_n$H	4	H$_n$LH	24
LHL	8	HHL	20
LHH$_n$	2	LLH$_n$	17
LHH	5	H$_n$HH	13
H$_n$LL	47	HHH	12
H$_n$LH$_n$	7	HHH$_n$	10
H$_n$LH	24	LHL	8
H$_n$H$_n$L	5	H$_n$LH$_n$	7
H$_n$H$_n$H$_n$	2	HH$_n$H$_n$	7
H$_n$H$_n$H	6	LH$_n$L	6
H$_n$HL	5	H$_n$H$_n$H	6
H$_n$HH$_n$	3	HLH$_n$	6
H$_n$HH	13	HH$_n$L	6
H$_n$H	1	LHH	5
HLL	76	H$_n$H$_n$L	5
HLH$_n$	6	H$_n$HL	5
HLH	48	LH$_n$H	4
HH$_n$L	6	HH$_n$H	4
HH$_n$H$_n$	7	H$_n$HH$_n$	3
HH$_n$H	4	LH$_n$H$_n$	2
HHL	20	LHH$_n$	2
HHH$_n$	10	H$_n$H$_n$H$_n$	2
HHH	12	H$_n$H	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Appendix 2: Group II—Pattern 2

#σ(σ̀σ)(σ́

Suffixed / prefixed word				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
1. ac(cè.le)(rá:.ti.o)nø			HLL	accélerà:te, atio)nø
2. ac(cèp.ta)(bí.li.ty)			HHL	accéptable, ity)
3. ac(cès.si)(bí.li.ty)			HH$_n$L	accéssable, ity)
4. ac(còm.mo)(dá:.ti.o)nø		~	HH$_n$L	accómodà:te, atio)nø
5. ac(cù:.mu)(lá:.ti.o)nø			HHL	accú:mulà:te, atio)nø
6. a(dàp.ta)(bí.li.ty)			LHL	adáptable, ity)
7. ad(jù:.di)(cá:.ti.o)nø			HHL	adjú:dicà:te, atio)nø
8. ad(mì.nis)(trá:.ti.o)nø	ad(mì.nis)(trá:.ti.o)nø		HLH$_n$	admínistrà:te, atio)nø
9. ad(mìs.si)(bí.li.ty)	ad(mìs.si)(bí.li.ty)		HH$_n$L	admíssible, ity)
10. a(dùl.te)(rá:.ti.o)nø			LH$_n$L	adúlterà:te, atio)nø
11. ad(vì:.sa)(bí.li.ty)	ad(vì:.sa)(bí.li.ty) +		HHL	adví:sable, ity)
12. af(fì.li)(á:.ti.o)nø			HLL	affílià:te, atio)nø
13. ag(glò.me)(rá:.ti.o)nø		~	HLL	agglómerà:te, atio)nø
14. al(lì.te)(rá:.ti.o)nø			H$_n$LL	allíterà:te, atio)nø
15. a(màl.ga)(má:.ti.o)nø			LH$_n$L	amálgamà:te, atio)nø
16. an(tè:.ri)(ó.ri.ty)		~	H$_n$HL	anté:rior, ante, ity)
17. a(pò.ca)(lýp.ti.cø)		~	LLL	apócalyps, apo, icø)
18. a(pò.lo)(gé.ti.cø)		~	LLL	apólogy, apo, icø)
19. a(pò.lo)(gé.ti.cal)ly		~	LLL	apòlogétic, apo
20. ap(prò.pri)(á:.ti.o)nø		~	HLL	appròprià:te, atio)nø
21. ap(prò.xi)(má:.ti.o)nø		~	HHL	appróximà:te, atio)nø
22. a:r(tì.cu)(lá:.ti.o)nø			HLL	a:rtículà:te, arti, atio)nø
23. as(sàs.si)(ná:.ti.o)nø			H$_n$H$_n$L	assássinà:te, atio)nø
24. as(sè.ve)(rá:.ti.o)nø			H$_n$LL	asséverà:te, atio)nø
25. as(sì.bi)(lá:.ti.o)nø			H$_n$LL	assíbilà:te, atio)nø
26. as(sì.mi)(lá:.ti.o)nø			H$_n$LL	assímilà:te, atio)nø
27. au:(thèn.ti)(cá:.ti.o)nø			HH$_n$L	au:théntica:te, atio)nø
28. au:(thò.ri)(tá.ri.a)nø		~	HLL	au:thórity, a)nø
29. a(và:i.la)(bí.li.ty)			LHL	avá:ilable, ity)
30. ca(pì.tu)(lá:.ti.o)nø			LLL	capítulà:te, atio)nø
31. co:(à.gu)(lá:.ti.o)nø			HLL	co:águlà:te, atio)nø
32. col(là.bo)(rá:.ti.o)nø			H$_n$LL	colláborà:te, atio)nø
33. com(mè.mo)(rá:.ti.o)nø			H$_n$LL	commémorà:te, atio)nø
34. com(mì.se)(rá:.ti.o)nø			H$_n$LL	commíserà:te, atio)nø
35. com(mìs.sio)(**nái.re**)			H$_n$H$_n$L	commíssion, (**áire**)
36. com(mù:.ni)(cá:.ti.o)nø			H$_n$HL	commú:nicà:te, atio)nø
37. cor(rò.bo)(rá:.ti.o)nø		~	H$_n$LL	corróborà:te, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
38. cor(rùp.ti)(bí.li.ty)			H$_n$HL	corrúptible, ity)
39. de(bì.li)(tá:.ti.o)nø	de:(bì.li)(tá:.ti.o)nø +		HLL / LLL	debílità:te ^+, atio)nø
40. de(fèn.si)(bí.li.ty)	de:(fèn.si)(bí.li.ty)+		HH$_n$L / LH$_n$L	defénsible ^+, ity)
41. de(gè.ne)(rá:.ti.o)nø	de:(gè.ne)(rá:.ti.o)nø +		HLL / LLL	degénerà:te ^+, atio)nø
42. de(lì.be)(rá:.ti.o)nø	de:(lì.be)(rá:.ti.o)nø +		HLL / LLL	delíberà:te ^+, atio)nø
43. de(lì.ne)(á:.ti.o)nø	de:(lì.ne)(á:.ti.o)nø +		HLL / LLL	delíneà:te ^+, atio)nø
44. de(nò.mi)(ná:.ti.o)nø	de:(nò.mi)(ná:.ti.o)nø +	~	HLL / LLL	denóminà:te ^+, atio)nø
45. de(tè:.rio)(rá:.ti.o)nø	de:(tè:.rio)(rá:.ti.o)nø +	~	LHL / HHL	deté:riorà:te, detériorà:te$_{Am}$, atio)nø
46. de(tè:r.mi)(ná:.ti.o)nø	de:(tè:r.mi)(ná:.ti.o)nø +		LHL / HHL	deté:rmine ^+, atio)nø
47. de(tè:r.mi)(nís.ti.cø)	de:(tè:r.mi)(nís.ti.cø) +		LHL / HHL	deté:rmine ^+
48. di:(gès.ti)(bí.li.ty)	di(gès.ti)(bí.li.ty)		HH$_n$L / LH$_n$L	digéstible, ity)
49. di(là.pi)(dá:.ti.o)nø			LLL	dilápidà:te, atio)nø
50. dis(crì.mi)(ná:.ti.o)nø			H$_n$LL	discríminà:te, atio)nø
51. dis(sè.mi)(ná:.ti.o)nø			H$_n$LL	disséminà:te, atio)nø
52. dis(sì.mu)(lá:.ti.o)nø			H$_n$LL	dissímulà:te, atio)nø
53. dis(sò.ci)(á:.ti.o)nø			H$_n$LL	dissócià:te, atio)nø
54. dis(sò.lu)(bí.li.ty)		~	H$_n$LL	dissóluble, ity)
55. do(mès.ti)(cá:.ti.o)nø			LH$_n$L	doméstocà:te, atio)nø
56. ec(clè:.si)(ás.ti.cø)			HHL	ecclé:sia, icø)
57. ec(clè:.si)(ás.ti)(cìs.mø)			HHL	ecclè:siástic, (ismø)
58. e(jà.cu)(lá:.ti.o)nø	e:(jà.cu)(lá:.ti.o)nø		HLL / LLL	ejáculà:te, e: jáculà:te, atio)nø
59. e(là.bo)(rá:.ti.o)nø	e:(là.bo)(rá:.ti.o)nø		HLL / LLL	eláborà:te, e:láborà:te, atio)nø
60. e(lèc.tio)(**née.rø**)*			LHL	eléction, (**ée.rø**)
61. e(lì.ci)(tá:.ti.o)nø	e:(lì.ci)(tá:.ti.o)nø		HLL / LLL	elícit ^, atio)nø
62. e(lì.mi)(ná:.ti.o)nø	e:(lì.mi)(ná:.ti.o)nø +		HLL / LLL	elíminà:te ^+, atio)nø
63. e(lù:.ci)(dá:.ti.o)nø	e:(lù:.ci)(dá:.ti.o)nø		LHL / HHL	elú:cidà:te ^, atio)nø
64. e(màn.ci)(pá:.ti.o)nø	e:(màn.ci)(pá:.ti.o)nø +		HH$_n$L / LH$_n$L	emáncipà:te ^+, atio)nø
65. e(màs.cu)(lá:.ti.o)nø	e:(màs.cu)(lá:.ti.o)nø		HH$_n$L / LH$_n$L	emásculà:te ^, atio)nø
66. e(nù:.me)(rá:.ti.o)nø			LHL	enú:merà:te, atio)nø
67. e(nùn.ci)(á:.ti.o)nø			LH$_n$L	enúncià:te, atio)nø
68. en(vì:.ron)(mén.ta)lø &			H$_n$HH$_n$	enví:ronment &, a)lø
69. e(pìs.co)(pá:.li.a)nø			LH$_n$L	epíscopal, a)nø
70. e(quà.li)(tá:.ri.a)nø	e(quà.li)(tá:.ri.a)nø	~	LLL	equálity, a)nø
71. e(quì.vo)(cá:.ti.o)nø			LLL	equívocà:te, atio)nø
72. e(rà.di)(cá:.ti.o)nø			LLL	erádicà:te, atio)nø
73. e(và.cu)(á:.ti.o)nø			LLL	evácuà:te, atio)nø
74. e(và.lu)(á:.ti.o)nø			LLL	eváluà:te, atio)nø
75. e(vàn.ge)(lís.ti.cø)			LH$_n$L	evángelist, icø)
76. e(và.po)(rá:.ti.o)nø			LLL	eváporà:te, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
77. e(vìs.ce)(rá:.ti.o)nø	e:(vìs.ce)(rá:.ti.o)nø		HH$_n$L / LH$_n$L	evíscerà:te ^, atio)nø
78. e(xàg.ge)(rá:.ti.o)nø &			HHL	exággerà:te &, atio)nø
79. e(xà.mi)(ná:.ti.o)nø &			HLL	exámine &, atio)nø
80. e(xàs.cer)(bá:.ti.o)nø &			HH$_n$H$_n$	exácerbà:te &, atio)nø
81. e(xàs.pe)(rá:.ti.o)nø	e(xà:s.pe)(rá:.ti.o)nø		HH$_n$L / HHL	exásperà:te & exá:sperà:te, atio)nø
82. ex(cì:.ta)(bí.li.ty)&			HHL	excí:table &, ity)
83. ex(hì.la)(rá:.ti.o)nø &			HLL	exhílarà:te &, atio)nø
84. e(xò.ne)(rá:.ti.o)nø &		~	HLL	exónerà:te & ~, atio)nø
85. ex(pàn.si)(bí.li.ty)			HH$_n$L	expánsible &, ity)
86. ex(pè:.ri)(én.ti.a)lø &			HHL	expé:riance &, a)lø
87. ex(pòs.tu)(lá:.ti.o)nø &		~	HH$_n$L	expóstulà:te & ~, atio)nø
88. ex(tè:r.mi)(ná:.ti.o)nø &			HHL	exté:rminà:te &, atio)nø
89. ex(trà.po)(lá:.ti.o)nø &			HLL	extrápolà:te &, atio)nø
90. fe(lì.ci)(tá:.ti.o)nø &			LLL	felícità:te &, atio)nø
91. ges(tì.cu)(lá:.ti.o)nø			H$_n$LL	gestículà:te, atio)nø
92. ha(bì.li)(tá:.ti.o)nø &			LLL	habílità:te &, atio)nø
93. ha(bì.tu)(á:.ti.o)nø &			LLL	habítuà:te &, atio)nø
94. hal(lù:.ci)(ná:.ti.o)nø			H$_n$HL	hallú:cinà:te, atio)nø
95. hy:(pò.the)(cá:.ti.o)nø			HLL	hy:póthecà:te, atio)nø
96. il(lè.gi)(bí.li.ty)			H$_n$LL	illégible, ity)
97. il(lù:.mi)(ná:.ti.o)nø			H$_n$HL	illú:minà:te, atio)nø
98. im(pè:r.so)(ná:.ti.o)nø			H$_n$HL	impérsonà:te, im, atio)nø
99. i(mà.gi)(ná:.ti.o)nø			LLL	imágine, atio)nø
100.im(près.sio)(nís.ti.cø)			H$_n$H$_n$L	impréssionist, icø)
101.in(cì.ne)(rá:.ti.o)nø			H$_n$LL	incínerà:te, atio)nø
102.in(còr.po)(rá:.ti.o)nø			H$_n$H$_n$L	incó:rporà:te, atio)nø
103.i(nò.cu)(lá:.ti.o)nø		~	LLL	inòculà:te ~, atio)nø
104.in(tè:r.po)(lá:.ti.o)nø			H$_n$HL	inté:rpolà:te, atio)nø
105.in(tè:r.pre)(tá:.ti.o)nø			H$_n$HL	inté:rpret, atio)nø
106.in(tèr.ro)(gá:.ti.o)nø			H$_n$H$_n$L	intérrogà:te, atio)nø
107.in(tò.xi)(cá:.ti.o)nø		~	H$_n$HL	intóxicà:te ~, atio)nø
108.in(vès.ti)(gá:.ti.o)nø			H$_n$H$_n$L	invéstigà:te, atio)nø
109.in(vì.gi)(lá:.ti.o)nø			H$_n$LL	invígilà:te, atio)nø
110.i(ràs.ci)(bí.li.ty)			LH$_n$L	iráscible, ity)
111.ma(nì.pu)(lá:.ti.o)nø			LLL	manípulà:te, atio)nø
112.ma(nò:eu.vra)(bí.li.ty)			LHL	manó:euvrable, ity)
113.ma(trì.cu)(lá:.ti.o)nø			LLL	matrículà:te, atio)nø
114.mo(nò.po)(lís.ti.cø)		~	LLL	monópolist ~, icø)
115.o(blì.te)(rá:.ti.o)nø			LLL	oblíterà:te, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word				
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
116.of(fì.ci)(á:.ti.o)nø	o:f(fì.ci)(á:.ti.o)nø +		HLL	offícià:te ^+, atio)nø
117.o(rì.gi)(ná.li.ty) &			LLL	oríginal &, ity)
118.pe(ràm.bu)(lá:.ti.o)nø			LH$_n$L	perámbulà:te, atio)nø
119.per(cèp.ti)(bí.li.ty)			H$_n$HL	percéptible, ity)
120.per(fèc.ti)(bí.li.ty)	pe:r(fèc.ti)(bí.li.ty)		H$_n$HL / HHL	perféctible, pe:rféctible, ity)
121.per(pè.tu)(á:.ti.o)nø			H$_n$LL	perpétuà:te, atio)nø
122.po:(tèn.ti)(á:.ti.o)nø			HH$_n$L	po:téntià:te, atio)nø
123.pre(cì.pi)(tá:.ti.o)nø	pre:(cì.pi)(tá:.ti.o)nø +		HLL / LLL	precípità:te ^+, atio)nø
124.pre(dìc.ta)(bí.li.ty)	pre:(dìc.ta)(bí.li.ty) +		LHL / HHL	predíctable ^+, ity)
125.pre(và.ri)(cá:.ti.o)nø	pre:(và.ri)(cá:.ti.o)nø^+		HLL / LLL	prevárică:te ^+, atio)nø
126.pro:(cràs.ti)(ná:.ti.o)nø			HH$_n$L	pro:crástinà:te, atio)nø
127.pro:(lì.fe)(rá:.ti.o)nø		pro(lì.fe)(rá:.ti.o)nø	HLL / LLL	pro:líferà:te, prolíferà:te$_{Am}$, atio)nø
128.pro(nùn.ci)(á:.ti.o)nø			LH$_n$L	pronó:unce, atio)nø
129.pro(pò:r.tio)(ná.li.ty)			LHL	propórtional, ity)
130.re(cì.pro)(cá:.ti.o)nø	re:(cì.pro)(cá:.ti.o)nø +		HLL / LLL	recíprocà:te ^+, atio)nø
131.re(crì.mi)(ná:.ti.o)nø	re:(crì.mi)(ná:.ti.o)nø +		HLL / LLL	recrímină:te ^+, atio)nø
132.re(cù:.pe)(rá:.ti.o)nø	re:(cù:.pe)(rá:.ti.o)nø +		LHL / HHL	recú:perà:te ^+, atio)nø
133.ref(rì.ge)(rá:.ti.o)nø	re:f(rì.ge)(rá:.ti.o)nø +		HLL	refrígerà:te ^+, atio)nø
134.re(mù:.ne)(rá:.ti.o)nø	re:(mù:.ne)(rá:.ti.o)nø +		LHL / HHL	remú:nerà:te ^, atio)nø
135.re(pù:.di)(á:.ti.o)nø	re:(pù:.di)(á:.ti.o)nø +		LHL / HHL	repù:dià:te ^+, atio)nø
136.res(pèc.ta)(bí.li.ty)	re:s(pèc.ta)(bí.li.ty) +		H$_n$HL / HHL	respéctable ^+, ity)
137.res(pòn.si)(bí.li.ty)	re:s(pòn.si)(bí.li.ty) +	~	H$_n$H$_n$L / HH$_n$L	respónsible ^+ ~, ity)
138.re(tì.cu)(lá:.ti.o)nø	re:(tì.cu)(lá:.ti.o)nø +		HLL / LLL	retículà:te ^+, atio)nø
139.re(vè:r.be)(rá:.ti.o)nø	re:(vè:r.be)(rá:.ti.o)nø +		LHL / HHL	revé:rberà:te ^+, atio)nø
140.re(vè:r.si)(bí.li.ty)	re:(vè:r.si)(bí.li.ty) +		LHL / HHL	revé:rsible ^+, ity)
141.so(lì.ci)(tá:.ti.o)nø	so:(lì.ci)(tá:.ti.o)nø +		HLL / LLL	solícit ^+, atio)nø
142.so(phìs.ti)(cá:.ti.o)nø			LH$_n$L	sophísticà:te, atio)nø
143.sub(ò:r.di)(ná:.ti.o)nø			HHL	subó:rdinà:te, atio)nø
144.sug(gès.ti)(bí.li.ty)			HH$_n$L	suggéstible, ity)
145.sus(cèp.ti)(bí.li.ty)			H$_n$HL	suscéptible, ity)
146.syl(là.bi)(cá:.ti.o)nø			H$_n$LL	syllábicà:te, atio)nø
147.ve(rì.di)(cá.li.ty) &			LLL	verídical, ity)
148.vi:(tù:.pe)(rá:.ti.o)nø	vi(tù:.pe)(rá:.ti.o)nø		LHL / HHL	vi:tú:perà:te, vitú:perà:te, atio)nø
149.vo:(cì.fe)(rá:.ti.o)nø			HLL	vo:cíferà:te, atio)nø
150.E(lì.za)(bé:.tha)nø			LLL	N, Elízabeth, a)nø
151.Ty(rò:.li)(**én.ne**)*			LHL	N, Tyró:l, (**énne**)

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group II: Suffixed / prefixed			
#σσσ			
Alphabetical		Frequency	
LLL	39	LLL	39
LH$_n$L	15	HLL	31
LHL	18	HHL	26
H$_n$LL	19	H$_n$LL	19
H$_n$H$_n$L	7	LHL	18
H$_n$HL	13	HH$_n$L	16
H$_n$HH$_n$	1	LH$_n$L	15
HLL	31	H$_n$HL	13
HLH$_n$	1	H$_n$H$_n$L	7
HH$_n$L	16	H$_n$HH$_n$	1
HH$_n$H$_n$	1	HLH$_n$	1
HHL	26	HH$_n$H$_n$	1

<table>
<tr><th colspan="4">Classical compound 1</th></tr>
<tr><th>British variant 1</th><th>British variant 2</th><th>#σσσ</th><th>Stem, morphemes</th></tr>
<tr><td>1. e(lèc.tro:)|(cá:r.di.o:)(gràm.mø)</td><td></td><td>LHH</td><td>CC12, grammø), e(lèc.tro)|</td></tr>
<tr><td>2. e(lèc.tro:)|(cá:r.di.o:)(gràph.ø)</td><td></td><td>LHH</td><td>CC12, graphø), e(lèc.tro)|</td></tr>
<tr><td>3. e(lèc.tro:)|(mág.ne)(tìs.mø)</td><td></td><td>LHH</td><td>CC1 mágnetìsm, e(lèc.tro)|</td></tr>
<tr><td>4. e(lèc.tro:)|(mó:.ti.ve)</td><td></td><td>LHH</td><td>CC1 mó:tive, e(lèc.tro)|</td></tr>
<tr><td>5. e(lèc.tro:)|(pá.la.to)(gràm.mø)</td><td>e(lèc.tro:)|(pá.la.to:)(gràm.mø)</td><td>LHH</td><td>CC12, grammø), e(lèc.tro)|</td></tr>
<tr><td>6. e(lèc.tro:)|(stá.ti.cø)</td><td></td><td>LHH</td><td>CC1, stá.ti.cø), icø), e(lèc.tro)|</td></tr>
</table>

Group II: CC1	
#σσσ	
LHH	6

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Classical compound 2			
British variant 1	**American**	**#σσσ**	**Stem, morphemes**
1. ac(cè.le)(ró.me.te)rø &	~	HLL	mete)rø
2. a(mà.nu)(én.si.sø)		LLL	sisø)
3. a(nàch.ro)(nís.ti.cø)		LHL	CC2? icø)
4. ap(pèn.di)(cí:.ti.sø)		HH_nL	CC2 itisø)
5. b<u>a</u>c(tè:.ri)(ó.lo.gy)	~	HHL	b<u>a</u>cté:rium ~, ology)
6. de(sì.de)(rá:.tu.mø)		LLL	umø)
7. ec(clè:.si)(ó.lo.gy)		HHL	CC2 ecclé:sia, ology)
8. en(cỳ:.clo)(pé:.di.a)		H_nHL	ia)
9. e(pìs.te)(mó.lo.gy) &		LH_nL	ology)
10. e(rỳth.r<u>o</u>:)(mý:.ci.nø)	~	LHH	mycinø)
11. ka(lè:i.do)(scó.pi.cø)	~	LHL	icø)
12. la(rỳn.g<u>o</u>:)(grá..phi.cø) &		LH_nH	icø), CC1 la(rỳn.g<u>o</u>:)| ?
13. la(rỳn.g<u>o</u>:)(ló.gi.ca)lϕ &	~	LH_nH	CC2 ology), ica)lø, CC1 la(rỳn.g<u>o</u>:)| ?
14. la(rỳn.g<u>o</u>:)(phán.to.mø)		LH_nH	CC2 phántomø), CC1 la(rỳn.g<u>o</u>:)| ?
15. la(rỳn.g<u>o</u>:)(scó.pi.cø) &	~	LH_nH	icø) , CC1 la(rỳn.g<u>o</u>:)| ?
16. tu(bè:r.cu)(ló:.si.sø)		LHL	CC2 osisø)
17. se(lè:.n<u>o</u>:)(grá..phi.cø)		LHH	CC2 grá.phø), icø) , CC1 se(lè:.n<u>o</u>:)| ?

Group II: CC2			
#σσσ			
Alphabetical		**Frequency**	
LLL	2	LH_nH	4
LH_nL	1	LHL	3
LH_nH	4	LLL	2
LHL	3	LHH	2
LHH	2	HHL	2
H_nHL	1	LH_nL	1
HLL	1	H_nHL	1
HH_nL	1	HLL	1
HHL	2	HH_nL	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
<u>a</u>	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Monomorphemic word			
British variant 1	**American**	**#σσσ**	**Stem**
1. ac(cè.le)(rán.do)		HLL	B *Italian*
2. im(pè.di)(mén.ta)		H_nLL	B *Latin*
3. Ba(nà:.na)(rá:.ma)	Ba(nà.na)(rá.ma)	LHL / LLL	N
4. Ec(clè:.si)(ás.t<u>e</u>:.sø)		HHL	N
5. Ec(clè:.si)(ás.ti.cu)sø		HHL	N
6. <u>E</u>(pà.mi)(nó:n.d<u>a</u>.sø)	~	LLL	N
7. Mo(nòn.ga)(hé:.la)	~	LH_nL	N

Group II: Monomorphemic			
#σσσ			
Alphabetical		**Frequency**	
LLL	2	LLL	2
LH_nL	1	HHL	2
LHL	1	LH_nL	1
H_nLL	1	LHL	1
HLL	1	H_nLL	1
HHL	2	HLL	1

Group II: Summary			
#σσσ			
Alphabetical		**Frequency**	
LLL	43	LLL	43
LH_nL	17	HLL	33
LH_nH	4	HHL	30
LHL	22	LHL	22
LHH	8	H_nLL	20
H_nLL	20	LH_nL	17
H_nH_nL	7	HH_nL	17
H_nHL	14	H_nHL	14
H_nHH_n	1	LHH	8
HLL	33	H_nH_nL	7
HLH_n	1	LH_nH	4
HH_nL	17	H_nHH_n	1
HH_nH_n	1	HLH_n	1
HHL	30	HH_nH_n	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
<u>a</u>	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Appendix 3: Group III—Pattern 3

#(ø.σ̀)(σ̀σ)(σ́

Group III / a—only Pattern 3: #(ø.σ̀)(σ̀σ)(σ́

Suffixed / prefixed word	Group III / a: Pattern 3			
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
1. (ø.à:)(prì.o)(rís.ti.cø)			HLL	à pri:ó:ri:, à prió:ri:, icø)
2. (ø.dè:)(còm.po)(sí.ti.o)nø		~	HH_nL	dè:compó:se, dè:compó:se +, io)nø
3. (ø.dìs)(ìn.cli)(ná:.ti.o)nø			H_nH_nL	dìsinclí:ne, atio)nø
4. (ø.dìs)(ìn.fes)(tá:.ti.o)nø			$H_nH_nH_n$	dìsinfést, atio)nø
5. (ø.mìs)(àp.pre)(**hén.dø**)*			H_nHL	àpprehénd, (ø.mis)
6. (ø.mìs)(àp.pre)(hén.si.o)nø			H_nHL	mìsàpprehénd, io)nø
7. (ø.mìs)(càl.cu)(lá:.ti.o)nø			H_nH_nL	mìscálculà:te, atio)nø
8. (ø.nòn)(àl.co)(hó.li.cø)		~	H_nH_nL	àlcohólic, icø)
9. (ø.nòn)(ìn.ter)(fé:.ran)ce		~	$H_nH_nH_n$	ìnterfé:rance, (ø.non)
10. (ø.nòn)(ìn.ter)(vén.ti.o)nø		~	$H_nH_nH_n$	ìntervéntion, (ø.non)
11. (ø.prè:)(dìs.po)(sí.ti.o)nø			HH_nL	prè:dispóse, (ø.prè:), io)nø
12. (ø.prè:)(fì.gu)(rá:.ti.o)nø			HLL	prè:fígure @, (ø.prè:), atio)nø
13. (ø.prè:)(mè.di)(cá:.ti.o)nø			HLL	pre:médicà:te @, (ø.prè:), atio)nø
14. (ø.rè:)(dìs.tri)(bú:.ti.o)nø			HH_nL	rè:distríbu:te, rè:dístribu:te, (ø.rè:), io)nø
15. (ø.rè:)(è.du)(cá:.ti.o)nø			HLL	rè:éducà:te, (ø.rè:), atio)nø
16. (ø.sèlf)(àb.ne)(gá:.ti.o)nø			HHL	àbnegá:tion, (ø.sèlf), atio)nø
17. (ø.sèlf)(prè.ser)(vá:.ti.o)nø			HLH_n	prèservá:tion, (ø.sèlf), atio)nø
18. (ø.trà**ns**)(còn.ti)(nén.ta)lø ^*		~	HH_nL	còntinéntal, (ø.trans), a)lø
19. (ø.ùn)(cè.re)(mó:.ni.ou)sø			H_nLL	cèremó:nious, un., ou)sø
20. (ø.ùn)(cì:r.cum)(cí.si.o)nø			H_nHH_n	cì:rcumcísion, un., io)nø
21. (ø.ùn)(è:.co)(nó.mi.cø)	(ø.ùn)(è.co)(nó.mi.cø)		H_nHL / H_nLL	è:conómic, un., icø)
22. (ø.ùn)(ìn.ter)(rúp.te.dø)			$H_nH_nH_n$	ìnterrúpted, un., edø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group III/a: Suffixed / prefixed			
#σσσ			
Alphabetical		**Frequency**	
H_nLL	2	$H_nH_nH_n$	4
H_nH_nL	3	HLL	4
$H_nH_nH_n$	4	HH_nL	4
H_nHL	3	H_nH_nL	3
H_nHH_n	1	H_nHL	3
HLL	4	H_nLL	2
HLH_n	1	H_nHH_n	1
HH_nL	4	HLH_n	1
HHL	1	HHL	1

Classical compound 2—Group III / a: Pattern 3		
British variant 1	**#σσσ**	**Stem, morphemes**
1. (ø.chrỳs)(è.le)(phán.ti:)ne	H_nLL	èlephánti:ne

Group III / a: CC2	
#σσσ	
H_nLL	1

Monomorphemic word—Group III / a: Pattern 3		
British variant 1	**#σσσ**	**Stem**
1. (ø.Rhò:s)(llà.ner)(chrú:.go)gø	HLH_n	N

Group III / a: Monomorphemic	
#σσσ	
HLH_n	1

Group III/a: Summary			
#σσσ			
Alphabetical		**Frequency**	
H_nLL	3	$H_nH_nH_n$	4
H_nH_nL	3	HLL	4
$H_nH_nH_n$	4	HH_nL	4
H_nHL	3	H_nLL	3
H_nHH_n	1	H_nH_nL	3
HLL	4	H_nHL	3
HLH_n	2	HLH_n	2
HH_nL	4	H_nHH_n	1
HHL	1	HHL	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group III / b—Patterns 3~2: #(ø.σ̀)(σ̀σ)(σ́ ~ #σ(σ̀σ)(σ́

Suffixed / prefixed word	Group III / b: Patterns 3~2			
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
1. af(fò.res)(tá:.ti.o)nø &		~ (ø.àf)(fò:res)(tá:.ti.o)nø	HLH_n / HH_nH	affórest ~, af, atio)nø
2. co:(hà.bi)(tá:.ti.o)nø	(ø.cò:)(hà.bi)(tá:.ti.o)nø		HLL	co:hábit @, co, atio)nø
3. co:(hà.bi)(**té:e.ø**)*	(ø.cò:)(hà.bi)(**té:e.ø**)*		HLL	co:hábit @, co, (ée.ø)
4. con(cès.si.o)(**nái.re**)*	(ø.còn)(cès.si.o)(**nái.re**)*+		H_nH_nL	concéssion, con, (áire)
5. con(fà.bu)(lá:.ti.o)nø	(ø.còn)(fà.bu)(lá:.ti.o)nø +		H_nLL	confábulà:te, con, atio)nø
6. con(fè.de)(rá:.ti.o)nø	con(fè.de)(rá:.ti.o)nø +, (ø.còn)(fè.de)(rá:.ti.o)nø +		H_nLL	conféderà:te, con, atio)nø
7. con(fì.gu)(rá:.ti.o)nø	(ø.còn)(fì.gu)(rá:.ti.o)nø	1 2~	H_nLL	confígurà:te, con, atio)nø
8. con(glò.me)(rá:.ti.o)nø	con(glò.me)(rá:.ti.o)nø, (ø.còn)(glò.me)(rá:.ti.o)nø	1 ~ 3~	H_nLL	conglómerà:te, con, atio)nø
9. con(grà.tu)(lá:.ti.o)nø	con(grà.tu)(lá:.ti.o)nø +, (ø.còn)(grà.tu)(lá:.ti.o)nø +		H_nLL	congrátulà:te, con, atio)nø
10. con(sì.de)(rá:.ti.o)nø	(ø.còn)(sì.de)(rá:.ti.o)nø +		H_nLL	consíder @+, con, atio)nø
11. con(sò.li)(dá:.ti.o)nø	con(sò.li)(dá:.ti.o)nø +, (ø.còn)(sò.li)(dá:.ti.o)nø +	~	H_nLL	consólidà:te @+, con, atio)nø
12. cons(pì.ra)(tó:ria)lø	(ø.còn)(spì.ra)(tó:ria)lø		HLL / H_nLL	conspíratory, con, a)lø
13. con(tà.mi)(ná:.ti.o)nø	(ø.còn)(tà.mi)(ná:.ti.o)nø +		H_nLL	contáminà:te, con, atio)nø
14. con(vè:rti)(bí.li.ty)	con(vè:rti)(bí.li.ty) +, (ø.còn)(vè:rti)(bí.li.ty)		H_nLL	convé:rtible @+, con, ity)
15. con(vèn.ti.o)(ná.li.ty)	(ø.còn)(vèn.ti.o)(ná.li.ty)		H_nH_nL	convéntional, con, ity)
16. de:(fì.bri)(lá:.ti.o)nø	de:(fì:bri)(lá:.ti.o)nø, (ø.dè:)(fì.bri)(lá:.ti.o)nø		HLL / HLH	de:fíbrilà:te @, de:fí:brilà:te, de, atio)nø
17. de(lì.mi)(tá.ti.o)nø	(ø.dè:)(lì.mi)(tá.ti.o)nø		HLL / LLL	delímità:te / delímit, atio)nø
18. (ø.dè)(pò.pu)(lá:.ti.o)nø	de:(pò.pu)(lá:.ti.o)nø	~	HLL / LLL	de:populà:te @, de, atio)nø
19. (ø.dè:)(rè.gu)(lá:.ti.o)nø		de:(rè.gu)(lá:.ti.o)nø ~ 1	HLL	dè:régulà:te, derégulà:te, de, atio)nø
20. (ø.dè:)(sà.li)(ná:.ti.o)nø		de:(sà.li)(ná:.ti.o)nø	HLL	de:sálinà:te @, de, atio)nø
21. (ø.dè:)(sè.gre)(gá:.ti.o)nø		de:(sè.gre)(gá:.ti.o)nø	HLL	de:ségregà:te @, de, atio)nø
22. (ø.dè:)(tò.xi)(cá:.ti.o)nø	de(tò.xi)(cá:.ti.o)nø	de:(tò:.xi)(cá:.ti.o)nø	LHL / HHL	dè:tóxicà:te ~, de, atio)nø
23. dis(cò.lou)(rá:.ti.o)nø	(ø.dìs(cò.lou)(rá:.ti.o)nø		H_nLL	discólour @, dis, atio)nø
24. (ø.dìs)(còn.ti)(nú:i.ty)		dis(cò:n.ti)(nú:i.ty)	H_nH_nL / H_nHL	dìscontínue, dis, ity)
25. (ø.dìs)(è.qui)(lí.bri.u)mø		dis(è.qui)(lí.bri.u)mø	H_nLL	èquilíbrium, dis
26. (ø.dìs)(fò.res)(tá:.ti.o)nø	dis(fò.res)(tá:.ti.o)nø	2	H_nLH_n	disfórest @, dis, atio)nø
27. im(mù:.ta)(bí.li.ty)	(ø.ìm)(mù:.ta)(bí.li.ty), (ø.ìm)(mù:.ta)(bí.li.ty)		H_nHL	immú:table @, im, ity)
28. (ø.ìm)(pà:r.ti)(á.li.ty)	im(pà:r.ti)(á.li.ty)	21	H_nHL	impá:rtial @, im, ity)
29. im(plà:u.si)(bí.li.ty)	(ø.ìm)(plà:u.si)(bí.li.ty)	12	H_nHL	implá:usible @, im, ity)
30. im(pòs.si)(bí.li.ty)	(ø.ìm)(pòs.si)(bí.li.ty)	~	H_nH_nL	impòssible @, impòssible$_{Am}$, im, ity)
31. im(pràc.ti)(cá.li.ty)	(ø.ìm)(pràc.ti)(cá.li.ty)		H_nHL	impráctical @, im, ity)
32. im(prèg.na)(bí.li.ty)	(ø.ìm)(prèg.na)(bí.li.ty)		H_nHL	imprégnable @, im, ity)
33. im(prò.ba)(bí.li.ty)	(ø.ìm)(prò.ba)(bí.li.ty)	~	H_nLL	impróbable @ ~, im, ity)
34. in(cà:r.ce)(rá:.ti.o)nø	(ø.ìn)(cà:r.ce)(rá:.ti.o)nø		H_nHL	incá:rcerà:te, in, atio)nø
35. in(còm.pre)(hén.si.ble)	(ø.ìn)(còm.pre)(hén.si.ble)	1~ 2~	H_nH_nL	còmprehénsible ~, in, ible)
36. in(còm.pre)(hén.si.o)nø	(ø.ìn)(còm.pre)(hén.si.o)nø	1~2~	H_nH_nL	còmprehénsion ~, in, io)nø
37. in(còn.se)(quén.ti.a)lø	(ø.ìn)(còn.se)(quén.ti.a)lø	1~	H_nH_nL	cònsequéntial ~, in, a)lø
38. (ø.ìn)(còn.tro)(vé:r.ti.ble)	in(còn.tro)(vé:r.ti.ble)	1~	H_nH_nL	còntrové:rtible ~, in, ible)
39. in(fàl.li)(bí.li.ty)	(ø.ìn)(fàl.li)(bí.li.ty)		H_nH_nL	infàllible @, in, ity)
40. in(sèn.si)(bí.li.ty)	(ø.ìn)(sèn.si)(bí.li.ty)		H_nH_nL	sènsibílity, in, ity)
41. in(sèn.si)(tí.vi.ty)	(ø.ìn)(sèn.si)(tí.vi.ty)		H_nH_nL	sènsitívity, in, ity)
42. in(tàn.gi)(bí.li.ty)	(ø.ìn)(tàn.gi)(bí.li.ty)		H_nH_nL	intángible @, in, ity)
43. in(tì.mi)(dá:.ti.o)nø	(ø.ìn)(tì.mi)(dá:.ti.o)nø		H_nLL	intímidà:te @, in, atio)nø
44. in(tràc.ta)(bí.li.ty)	(ø.ìn)(tràc.ta)(bí.li.ty)		H_nHL	intráctable, in, ity)
45. in(tràn.si)(tí.vi.ty)	in(trà:n.si)(tí.vi.ty), (ìn)(tràn.si)(tí.vi.ty)	1	H_nH_nL / H_nHL	intránsitive, in, ity)
46. in(trà.va)(sá:.ti.o)nø	(ø.ìn)(trà.va)(sá:.ti.o)nø		H_nLL	intrávasà:te @, in, atio)nø
47. in(và.li)(dá:.ti.o)nø	(ø.ìn)(và.li)(dá:.ti.o)nø	1	H_nLL	inválidà:te, in, atio)nø
48. ir(rè.gu)(lá.ri.ty)	(ø.ìr)(rè.gu)(lá.ri.ty)	12	H_nLL	irrégular @, ity)
49. (ø.mìs)(rè.pre)(**sén.tø**)*		1 mis(rè.pre)(**sén.tø**)*	H_nLL	rèpresént, (ø.mis)
50. par(tì.cu)(lá.ri.ty)		1 (ø.pà:r)(tì.cu)(lá.ri.ty)	HLL / H_nLL	partícular, ity)
51. pre:(dès.ti)(ná:.ti.o)nø	pre(dès.ti)(ná:.ti.o)nø, (ø.prè:)(dès.ti)(ná:.ti.o)nø		HH_nL / LH_nL	pre:déstinà:te @, pre, atio)nø
52. (ø.prè:)(fà.bri)(cá:.ti.o)nø	pre:(fà.bri)(cá:.ti.o)nø		HLL	prè:fábricà:te, pre, atio)nø
53. pre:(mè.di)(tá:.ti.o)nø	pre(mè.di)(tá:.ti.o)nø, (ø.prè:)(mè.di)(tá:.ti.o)nø		HLL / LLL	pre:médità:te @, pre, atio)nø
54. (ø.prè:)(sùp.po)(sí.ti.o)nø			HHL	prè:suppó:se, pre, io)nø
55. re:(dè.co)(rá:.ti.o)nø	(ø.rè:)(dè.co)(rá:.ti.o)nø		HLL	re:décorà:te, re:, atio)nø
56. re(dù:pli)(cá:.ti.o)nø	(ø.rè:)(dù:pli)(cá:.ti.o)nø		LLH / HLH	redúplicà:te rè:dúplicà:te, re:, atio)nø
57. re:(fò.res)(tá:.ti.o)nø	(ø.rè:)(fò.res)(tá:.ti.o)nø	~	HLH_n	re:fórest @ ~, re:, atio)nø
58. re(gè.ne)(rá:.ti.o)nø	(ø.rè:)(gè.ne)(rá:.ti.o)nø		HLL /	regénerà:te @, re:, atio)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Suffixed / prefixed word	Group III / b: Patterns 3~2			
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
			LLL	
59. re(gù:rgi)(tá:.ti.o)nø	(ø.rè:)(gù:rgi)(tá:.ti.o)nø		LLH / HLH	regù:rgità:te @, re:, atio)nø
60. re(jù:.ve)(ná:.ti.o)nø	(ø.rè:)(jù:.ve)(ná:.ti.o)nø		LHL / HHL	rejú:venà:te ^+, re:, atio)nø
61. (ø.rè:)(jù:.ve)(nés.cen)ce	re(jù:.ve)(nés.cen)ce		LHL / HHL	rè:jù:venésce, re:, en)ce
62. re(sùs.ci)(tá:.ti.o)nø	(ø.rè:)(sùs.ci)(tá:.ti.o)nø		HH$_n$L / LH$_n$L	resúscità:te @, re:, atio)nø
63. trans(lì.te)(rá:.ti.o)nø ^	(ø.tràns)(lì.te)(rá:.ti.o)nø*	12	HLL	translíterà:te @, trans, atio)nø
64. (ø.tràns)(fì.gu)(rá:.ti.o)nø ^*	trans(fì.gu)(rá:.ti.o)nø		HLL	transfígure, trans, atio)nø
65. (ø.ùn)(prè:.pos)(sés.sin)gø	un(pré.pos.ses)sin.gø @		H$_n$LH$_n$ / H$_n$HH$_n$	prè:posséssing, un., in)gø
66. un(tòu.cha)(bí.li.ty)	(ø.ùn)(tòu.cha)(bí.li.ty)		H$_n$LL	untóuchable @, un., ity)

Group III/b: Suffixed / prefixed			
#σσσ			
Alphabetical		**Frequency**	
LLL	4	H$_n$LL	20
LLH	2	HLL	16
LH$_n$L	2	H$_n$H$_n$L	13
LHL	3	H$_n$HL	9
H$_n$LL	20	LLL	4
H$_n$LH$_n$	2	HHL	4
H$_n$H$_n$L	13	LHL	3
H$_n$HL	9	HLH	3
H$_n$HH$_n$	1	LLH	2
HLL	16	LH$_n$L	2
HLH$_n$	2	H$_n$LH$_n$	2
HLH	3	HLH$_n$	2
HH$_n$L	2	HH$_n$L	2
HH$_n$H	1	H$_n$HH$_n$	1
HHL	4	HH$_n$H	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Classical compound 1	Group III / b: Patterns 3~2			
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**
1. (ø.dò:)(dè.ca)(sýl.la)ble		do:(dè.ca)(sýl.la)ble	HLL	sýllable
2. (ø.trì:)(nì:.tro:)(tó.lu)(è:.ne)	tri:(nì:.tro:)(tó.lu)(è:.ne)	~	HHH	tri-nitro-tolu-ene

Group III / b: CC1	
#σσσ	
HLL	1
HHH	1

Classical compound 2	Group III / b: Patterns 3~2			
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**
1. (ø.à:)(chòn.dro:)(plá:.si.a)	a(chòn.dro:)(plá:.si.a)	~	LH$_n$H / HH$_n$H	ia)
2. (ø.à:)(chòn.dro:)(plás.ti.cø)	a(chòn.dro:)(plás.ti.cø), (ø.à:)(chòn.dro:)(plá:s.ti.cø)	~	LH$_n$H / HH$_n$H	à:chòndro:plá:sia, icø)
3. con(tèm.po)(rá.ne.ou)sø &	(ø.còn)(tèm.po)(rá.ne.ou)sø		H$_n$H$_n$L	ou)sø
4. ex(tèm.po)(rá:.ne.ou)sø &	(ø.èx)(tèm.po)(rá:.ne.ou)sø		HH$_n$L	ou)sø
5. in(tèl.li)(gén.tsi.a)	(ø.ìn)(tèl.li)(gén.tsi.a)		H$_n$H$_n$L	ia)

Group III/b: CC2			
#σσσ			
Alphabetical		**Frequency**	
LH$_n$H	2	LH$_n$H	2
H$_n$H$_n$L	2	H$_n$H$_n$L	2
HH$_n$L	1	HH$_n$H	2
HH$_n$H	2	HH$_n$L	1

Group III/b: Summary			
#σσσ			
Alphabetical		**Frequency**	
LLL	4	H$_n$LL	20
LLH	2	HLL	17
LH$_n$L	2	H$_n$H$_n$L	15
LH$_n$H	2	H$_n$HL	9
LHL	3	LLL	4
H$_n$LL	20	HHL	4
H$_n$LH$_n$	2	LHL	3
H$_n$H$_n$L	15	HLH	3
H$_n$HL	9	HH$_n$L	3
H$_n$HH$_n$	1	HH$_n$H	3
HLL	17	LLH	2
HLH$_n$	2	LH$_n$L	2
HLH	3	LH$_n$H	2
HH$_n$L	3	H$_n$LH$_n$	2
HH$_n$H	3	HLH$_n$	2
HHL	4	H$_n$HH$_n$	1
HHH	1	HHH	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group III / c—Patterns 3~2~1: #(ø.σ̀)(σ̀σ)(σ́ ~ #σ(σ̀σ)(σ́ ~ #(σ̀σσ)(σ́

Suffixed / prefixed word	Group III / c: Patterns 3~2~1			
British variant 1	**British variants 2, 3, 4**	**American**	**#σσσ**	**Stem, morphemes**
1. (ø.dìs)(sà.tis)(fác.ti.o)nø	(dìs.sa.tis)(fác.ti.o)nø, dis(sà.tis)(fác.ti.o)nø	123	H_nLH_n	dìssátisfy:, dissátisfy:, dis, io)nø
2. (dìs.si.mi)(lá.ri.ty)	dis(sì.mi)(lá.ri.ty), (ø.dìs)(sì.mi)(lá.ri.ty)		H_nLL	dissímilar @, dis, ity)
3. (dìs.si.mi)(lá:.ti.o)nø	dis(sì.mi)(lá:.ti.o)nø, (ø.dìs)(sì.mi)(lá:.ti.o)nø		H_nLL	dissímilà:te @, dis, atio)nø
4. i:(dè.a)(lì:.ze)(á:.ti.o)nø	(ø.ì:)(dè.a)(lì:.ze)(á:.ti.o)nø, i:(dè:.a)(lì:.ze)(á:.ti.o)nø, (ì:.de.a)(lì:.ze)(á:.ti.o)nø +	i:(dè:.a.li)(zá:.ti.o)nø	HLL / HHL	i:déali:ze @, i:dé:ali:ze, í:deali:ze i:dé:ali:ze$_{Am}$, atio)nø
5. il(lò.gi)(cá.li.ty)	(ø.ìl)(lò.gi)(cá.li.ty), (ìl.lo.gi)(cá.li.ty)	~	H_nLL	illógical @ ~, il, ity)

Group III/c	
#σσσ	
H_nLL	3
H_nLH_n	1
HLL	1
HHL	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Appendix 4: Group IV—Patterns 1~2

#(σ̀σσ)(σ́ ~ #σ(σ̀σ)(σ́

Suffixed / prefixed word				
British variant 1	**British variants 2, 3, 4**	**American**	**#σσσ**	**Stem, morphemes**
1. a(cà.de)(mí.ci.a)nø	*(à.ca.de)(mí.ci.a)nø*		LLL	àcadémic, acádemy, a)nø
2. *am(bàs.sa)(dó:.ri.a)lø*	(àm.bas.sa)(dó:ri.a)lø		H_nH_nL	ambássador, a)lø
3. ap(plì.ca)(bí.li.ty)	*(àp.pli.ca)(bí.li.ty)*		HLL	applícable, ápplicable, ity)
4. a(rìth.me)(tí.ci.a)nø	***(à.rith.me)****(tí.ci.a)nø**		LHL	àrithmétics, a)nø
5. (cè:r.ti.fi)(cá:.ti.o)nø	*cer(tì.fi)(cá:.ti.o)nø*		HLL / H_nLL	certíficà:te / cé:rtify:, atio)nø
6. (còm.bi.na)(tó:ria)lø		1 *com(bì:.na)(tó:ria)lø*	H_nHL / H_nLL	combí:ne ~, a)lø
7. (còm.pa.ra)(bí.li.ty)	*com(pà.ra)(bí.li.ty), com(pà:.ra)(bí.li.ty)*	1 ~ 2 ~	H_nHL / H_nLL	cómparable ~ compárable @+ ~, compá:rable, ity)
8. *com(pà.ti)(bí.li.ty)*	(còm.pa.ti)(bí.li.ty) +		H_nLL	compátible, ity)
9. *con(cà:.te)(ná:.ti.o)nø*	(còn.ca.te)(ná:.ti.o)nø	12	H_nHL / H_nLL	concátenà:te, atio)nø
10. de(mòn.stra)(bí.li.ty)	*(dè.mon.stra)(bí.li.ty)*	~	LH_nL	demónstrable, démonstrable, ity)
11. *hu(mà.ni)(tá.ri.a)nø*	(hù.ma.ni)(tá.ri.a)nø		LLL	humánity, a)nø
12. *hu(mì.li)(á.ti.o)nø*	(hù.mi.li)(á:.ti.o)nø		LLL	humílià:te, atio)n
13. *im(mù.ta)(bí.li.ty)*	(ìm.mu.ta)(bí.li.ty)		H_nLL	immútable, ity)
14. *in(à:u.gu)(rá:.ti.o)nø*	(**ìn.a:u.gu**)(rá:.ti.o)nø*		H_nHL	iná:ugurà:te, atio)nø
15. *in(fì.ni)(tí:.va)lø*	(ìn.fi.ni)(tí:.va)lø		H_nLL	infínitive, a)lø
16. *in(tè:r.pel)(lá:.ti.o)nø*	(ìn.ter.pel)(lá:.ti.o)nø	21	$H_nH_nH_n$ / H_nHH_n	inté:rpellà:te, atio)nø
17. *in(sè.mi)(ná.ti.o)nø*	(ìn.se.mi)(ná.ti.o)nø		H_nLL	inséminàte, atio)nø
18. mu(nì.ci)(pá.li.ty)	*(mù:.ni.ci)(pá.li.ty)*		HLL / LLL	munícipal, mù:nicípal +, ity)
19. *pa:r(tì.ci)(pá:.ti.o)nø*	(pàr.ti.ci)(pá:.ti.o)nø		HLL / H_nLL	partícipà:te, atio)nø
20. phos(phò.ry)(lá:.ti.o)nø	*(phòs.pho.ry)(lá:.ti.o)nø*	1~2~	H_nLL	phosphórylà:te, phósphorylà:te, atio)nø
21. *prog(nòs.ti)(cá:.ti.o)nø*	*prog(nòs.ti)(cá:.ti.o)nø,* (pròg.nos.ti)(cá:.ti.o)nø	*pro:g(nò:sti)(cá:.ti.o)nø*	HH_nL / HLH	prognósticà:te ~, atio)nø
22. *som(nàm.bu)(lá:.ti.o)nø*	(sòm.nam.bu)(lá:.ti.o)nø		H_nH_nL	somnámbulà:te, atio)nø
23. *to:(tà.li)(tá:.ri.a)nø*	(tò.ta.li)(tá:.ri.a)nø	1~2~	HLL / LLL	to:tálity, a)nø
24. trans(fè:.ra)(bí.li.ty)	*tra:ns(fè:.ra)(bí.li.ty),* ***(tràns.fe:.ra)****(bí.li.ty)*,* *(tràns.fe.ra)(bí.li.ty)**		HLL / HHL	transfé:rable, tra:nsfé:rable @, tránsferable, trá:nsferable, ity)
25. *u(tì.li)(tá:.ri.a)nø*	(ù:.ti.li)(tá:.ri.a)nø	~	HLL / LLL	utílity, a)nø

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group IV: Suffixed / prefixed			
#σσσ			
Alphabetical		Frequency	
LLL	6	H$_n$LL	10
LH$_n$L	1	HLL	7
LHL	1	LLL	6
H$_n$LL	10	H$_n$HL	4
H$_n$H$_n$L	2	H$_n$H$_n$L	2
H$_n$H$_n$H$_n$	1	LH$_n$L	1
H$_n$HL	4	LHL	1
H$_n$HH$_n$	1	H$_n$H$_n$H$_n$	1
HLL	7	H$_n$HH$_n$	1
HLH	1	HLH	1
HH$_n$L	1	HH$_n$L	1
HHL	1	HHL	1

<table>
<tr><th colspan="4">Classical Compound 1</th><th></th></tr>
<tr><th>British variant 1</th><th>British variants 2, 3, 4</th><th>American</th><th>#σσσ</th><th>Stem, morphemes</th></tr>
<tr><td>1. (mò.no:)|the(ís.ti.cø)</td><td>(mò.no:)|(ø.thè:)(ís.ti.cø),
mo(nò.the)(ís.ti.cø)</td><td>(mó:.no)|the(ís.ti.cø)</td><td>LHL / LLL /
LHH / HLL</td><td>icø), (mono)|</td></tr>
<tr><td>2. (pì:.-.zo:)|(ché.mis.try)</td><td>pi:(è:.zo:)|(ché.mis.try),
pi(è.zo:)|(ché.mis.try),
(pì:.e.zo:)|(ché.mis.try)</td><td>pi(è:.zo:)|(ché.mis.try)</td><td>LLH / HHH /
LHH / HLH</td><td>chémistry), pi(è:.zo:)|,
(pì:.e.zo:)|</td></tr>
<tr><td>3. (pì:.-.zo:)|e(léc.tri.cø)</td><td>pi:(è:.zo:)|e(léc.tri.cø),
pi(è.zo:)|e(léc.tri.cø),
(pì:.e.zo:)|e(léc.tri.cø)</td><td>pi(è:.zo:)|e(léc.tri.cø)</td><td>LLH / HHH /
LHH / HLH</td><td>electric, icø), , pi(è:.zo:)|,
(pì:.e.zo:)|</td></tr>
</table>

Group IV: CC1			
#σσσ			
Alphabetical		Frequency	
LLL	1	LHH	3
LLH	2	LLH	2
LHL	1	HHH	2
LHH	3	LLL	1
HLL	1	LHL	1
HLH	1	HLL	1
HHH	2	HLH	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

<table>
<tr><th colspan="4">Classical Compound 2</th><th></th></tr>
<tr><th>British variant 1</th><th>British variants 2, 3, 4</th><th>American</th><th>#σσσ</th><th>Stem, morphemes</th></tr>
<tr><td>1. an(tì.ci)(pá:.ti.o)nø</td><td>(àn.ti.ci)(pá:.ti.o)nø</td><td></td><td>H$_n$LL</td><td>antícipà:te, atio)nø</td></tr>
<tr><td>2. (àn.ti.pa)(thé.ti.cø)</td><td>an(tì.pa)(thé.ti.cø)</td><td></td><td>H$_n$LL</td><td>antípathy, icø)</td></tr>
<tr><td>3. an(tì.po)(dé:.a.nø)</td><td>(àn.ti.po)(dé:.a.nø)</td><td></td><td>H$_n$LL</td><td>antípodès, a)nø</td></tr>
<tr><td>4. a(pò.the)(ó.si.sø)</td><td>(à.po.the)(ó.si.sø)</td><td></td><td>LLL</td><td>osisø)</td></tr>
<tr><td>5. (à.ris.to)(crá.ti.cø)</td><td>a(rís.to)(crá.ti.cø)</td><td></td><td>LH$_n$L</td><td>áristocrat, arístocrat, icø)</td></tr>
<tr><td>6. (dò:.de.ca)(phó:.ni.cø)</td><td></td><td>do:(dè.ca)(phó:.ni.cø)</td><td>HLL</td><td>icø)</td></tr>
<tr><td>7. (È:.gyp.to)(ló.gi.ca)lϕ*</td><td>E(gỳp.to)(ló.gi.ca)lø</td><td>~</td><td>LHL /
HHL</td><td>È:gyptólogy ~, ica)lø</td></tr>
<tr><td>8. en(cè.pha)(ló.pa.thy)</td><td>(èn.ce.pha)(ló.pa.thy)</td><td>~</td><td>H$_n$LL</td><td>pathy)</td></tr>
<tr><td>9. (è:.qui)|li:(brá:.tio)nø</td><td>(è.qui)|li:(brá:.ti.o)nø,
(è:.qui)|li(brá:.ti.o)nø,
e:(quì.li)(brá:.ti.o)nø</td><td>e(quì.li)(brá:.ti.o)nø</td><td>HLL /
LLH /
LLL /
HLH</td><td>‖ è:quilí:brà:te !, èquilí:brà:te !,
è:quilíbrà:te !, e:quílibrà:te,
equílibrà:te$_{Am}$, (equi)|, ation)nø</td></tr>
<tr><td>10. ex(trà.va)(sá:.tio)nø</td><td>(èx.tra.va)(sá:.ti.o)nø</td><td></td><td>HLL</td><td>extrávasà:te @, atio)nø</td></tr>
<tr><td>11. ge(ròn.to)(ló.gi.ca)lϕ</td><td>(gè.ron.to)(ló.gi.ca)lϕ,
(gè.ron.to)(ló.gi.ca)lϕ</td><td>~</td><td>LH$_n$L</td><td>gèrontólogy ~, ica)lø</td></tr>
<tr><td>12. ge(ròn.to)(crá.ti.cø)</td><td>(gè.ron.to)(crá.ti.cø),
(gè.ron.to)(crá.ti.cø)</td><td>~</td><td>LH$_n$L</td><td>gèrontócracy ~, (crá.ti.cø)</td></tr>
<tr><td>13. his(tò.ri)(ó.gra.phe)rø</td><td>his(tò:.ri)(ó.gra.phe)rø,
(hìs.to:.ri)(ó.gra.phe)rø*,
(hìs.to.ri)(ó.gra.phe)rø</td><td></td><td>H$_n$HL /
H$_n$LL</td><td>històriógraphy,històriógraphy,
hìsto:riógraphy, hìstoriógraphy, er</td></tr>
<tr><td>14. i:(cò.no)(grá.phi.cø)</td><td>(ì:.co.no)(grá.phi.cø)</td><td>1~ ,
(ì:.co:.no)(grá.phi.cø)*</td><td>HLL /
HHL</td><td>ì:co:nógraphy ~, icø)</td></tr>
<tr><td>15. (ì:.co.sa)(hé:.dro.nø)</td><td>(ì:.co.sa)(hé:.dro.nø),
i:(cò.sa)(hé:.dro.nø)</td><td>1~ 2~</td><td>HLL</td><td>he:dronø)</td></tr>
<tr><td>16. (mè.tem.psy:)(chó:.si.sø
)</td><td>me(tèm.psy:)(chó:.si.sø)</td><td></td><td>LH$_n$H</td><td>osisø)</td></tr>
<tr><td>17. øs(pè:r.ma.to)(zó:.o.nø)</td><td></td><td>1
øs(pè:r.ma.to)(zó:.o.nø),
spe:r(mà.to)(zó:.o.nø),
øs(pèr.ma.to)(zó:.o.nø)</td><td>HLL /
H$_n$LL</td><td>(zó:.o.nø)</td></tr>
</table>

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group IV: CC2			
#σσσ			
Alphabetical		Frequency	
LLL	2	HLL	6
LLH	1	H$_n$LL	6
LH$_n$L	3	LH$_n$L	3
LH$_n$H	1	HLH	2
LHL	1	HHL	2
H$_n$LL	6	LLL	2
H$_n$HL	1	LLH	1
HLL	6	LHL	1
HLH	2	LH$_n$H	1
HHL	2	H$_n$HL	1

Monomorphemic word				
British variant 1	British variant 2	American	#σσσ	Stem
1. e(gà.li)(tá:.ri.a)nø ^	(è:.ga.li)(tá:.ri.a)nø	e(gà.li)(tá.ri.a)nø	HLL / LLL	*French*
2. ex(trà.va)(gán.za)	(èx.tra.va)(gán.za)		HLL	*Italian*
3. fo(rà.mi)(ní.fe.ra)	(fò.ra.mi)(ní.fe.ra) ^		LLL	*Latin*
4. in(à.mo)(rá.ta)	(ìn.a.mo)(rá.ta)		H$_n$LL	*Italian*
5. (mìs.ce.ge)(ná:.ti.o)nø	mis(cè.ge)(ná:.ti.o)nø		H$_n$LL	*Latin*
6. (**Àn.to:.ni**)(**ó:.ni**)*	An(tò:.ni)(**ó:.ni**)*	(Àn.to:.ni)(**ó.ni**)*	H$_n$HL	N
7. Lou(ì:.si)(á.na)	(Lò:u.i.si)(á.na)		HLL / LHL	N
8. (Tì:.con.de)(ró:.ga)	Ti:(còn.de)(ró:.ga)	1	HH$_n$L	N

Group IV: Monomorphemic			
#σσσ			
Alphabetical		Frequency	
LLL	2	HLL	3
LHL	1	LLL	2
H$_n$LL	2	H$_n$LL	2
H$_n$HL	1	LHL	1
HLL	3	H$_n$HL	1
HH$_n$L	1	HH$_n$L	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable		
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant		
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name		
a:	long vowel	+	dialectal	?	questionable analysis		
-	syncope	~	regular sound change in AmE	!	problematic word (stem)		
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)		
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis		
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́		

Group IV: Summary			
#σσσ			
Alphabetical		Frequency	
LLL	11	H$_n$LL	18
LLH	3	HLL	17
LH$_n$L	4	LLL	11
LH$_n$H	1	H$_n$HL	6
LHL	4	LH$_n$L	4
LHH	3	LHL	4
H$_n$LL	18	HLH	4
H$_n$H$_n$L	2	HHL	3
H$_n$H$_n$H$_n$	1	LLH	3
H$_n$HL	6	LHH	3
H$_n$HH$_n$	1	H$_n$H$_n$L	2
HLL	17	HH$_n$L	2
HLH	4	HHH	2
HH$_n$L	2	LH$_n$H	1
HHL	3	H$_n$H$_n$H$_n$	1
HHH	2	H$_n$HH$_n$	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Appendix 5: Group V: other patterns

Suffixed / prefixed word					
British variant 1	**British variants 2, 3**	**American**	**#σσσ**	**Stem, morphemes**	**Pattern**
1. am(bás.sa)(drès.sø)	am(bás.sa.dres)sø, <am(bàs.sa)(**drés.sø**)>		H_nH_nL	ambássador, (**éssø**)	2
2. an(nún.ci.a)**to**.ry	<an(nùn.ci)(á:.to)ry>	an(nún.ci.a)(tò:.ry)	H_nH_nL	annúncià:te, o)ry, (ory)$_{Am}$	2
3. an(tí.ci.pa)**to**.ry	<an(tì.ci)(pá:.to.ry)>, <(àn.ti.ci)(pá:.to)ry>	an(tí.ci.pa)(tò:.ry)	H_nLL	antícipà:te, o)ry, (ory)$_{Am}$	2~1
4. (cá.ri.ca)(**tù:.ris**)tø*	<(cà.ri.ca)(tú:.ris)tø>	(cá.ri.ca)tu.**ris**.tø*	LLL	cáricatu:re, càricatú:re, cáricature$_{Am}$, is)tø	1
5. <(clà.ri.fi)(cá:.to.ry)>	(clá.ri.fi)**ca.to**.ry	(clá.ri.fi)**ca**(tò:.ry)*, cla(rí.fi.ca)(tò:ry	LLL	clárify:, o)ry, (ory)$_{Am}$	1
6. <(clàs.si.fi)(cá:.to.ry)>	(clás.si.fi)**ca.to**.ry	(clás.si.fi)**ca**(tò:.ry)*, clas(sí.fi.ca)(tò:ry	H_nLL	clássify: , o)ry, (ory)$_{Am}$	1
7. <e(lú:.ci)(dà:.to)ry>	<e(lù.ci)(dá:.to.ry)>	e(lú:.ci.da)(tò:.ry)	LHL / LLL	elú:cidà:te, o)ry, (ory)$_{Am}$	2
8. i:(dén.ti)(fì:.a.ble)	<i:(dèn.ti)(fí:.a.ble) +>		HH_nL	i:déntify, able)	2
9. <(ø.ìr)(rè.con)(cí:.la.ble)>	<ir(rè.con)(cí:.la.ble)>, ir(ré.con)(**cì:.la**)ble*		H_nLH_n	réconcì:lable, rèconcí:lable, a)ble, able)	3~2
10. (jús.ti.fi)(cà:.to)ry	<(jùs.ti.fi)(cá:.to.ry)>, (jús.ti.fi)**ca**.to.ry	jus(tí.fi.ca)(tò:.ry) 1	H_nLL	jústify: , o)ry, (ory)$_{Am}$	1
11. <(mà.na.ge)(**rés.sø**)*>	(má.ne.ge)**res**.sø	2	LLL	mánager, (**éssø**)	1
12. <pa:r(tì.ci)(pá:.to)ry>	<(pàr.ti.ci)(pá:.to.ry)>, pa:r(tí.ci.pa)**to**.ry	pa:r(tí.ci.pa)(tò:.ry)	HLL / H_nLL	partícipà:te, o)ry, (ory)$_{Am}$	2~1
13. <(pù:.ri.fi)(cá:.to.ry)>	(pú:.ri.fi)(cà:.to)ry, (pú:.ri.fi)**ca.to**.ry	pu(rí.fi.ca)(tò:.ry), (pú:.ri.fi)**ca**(tò:.ry)*	HLL / LLL	pú:rify: , o)ry, (ory)$_{Am}$	1
14. <(Mè.phis.to)(phé:.le.a)nø >	<Mep(hìs.to)(phé:.le.a)nø> &, (Mè.phis)(tò.phe)(lé:.a)nø	1 3~	HH_nL / LH_nL	N, Mèphistópholè:se	1~2

Group V: Suffixed / prefixed			
#σσσ			
Alphabetical		**Frequency**	
LLL	5	LLL	5
LH_nL	1	H_nLL	4
LHL	1	H_nH_nL	2
H_nLL	4	HLL	2
H_nLH_n	1	HH_nL	2
H_nH_nL	2	LH_nL	1
HLL	2	LHL	1
HH_nL	2	H_nLH_n	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Classical compound 1					
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**	**Pattern**
1. <(àn.te)|pe(**núl.tø**)*>	<(àn.te)|pe(**núl.tø**)*>	(àn.te)|(pé:.nul)tø, <(àn.te)|pe(**núl.tø**)*>	H_nLH / H_nLL	penúlt &, pé:nult$_{Am,}$ (ànte)|	1
2. <(ø.bì:)|(pà:r.ti)(**sán.nø**)*>	bi:(pá:r.ti.sa)nø @		HHL	pá:rtisan, (ø.bì:)|	3
3. <(cò:un.ter)|at(trác.ti.o)nø>	(có:un.ter.at)(tràc.ti)o.nø*		H_nH_nH	attráction, (cò:unter)|	1
4. <(cò:un.ter)|in(tél.li.gen)ce >	(có:un.ter.in)(tèl.li)**gen**.ce*		$H_nH_nH_n$	intélligence, (cò:unter)|	1
5. <(mỳ.xo)|my:(**cé:.te**)*>	(mỳ.xo)|(mý:.ce.te)		HLH	mycé:te, (mỳxo)|	1
6. <(**và:.so:**)|**di:**(lá.to)rø>		1 <(và:so:)|di(lá.to)rø>, (và:so:)|(dí:.la:)**to**.rø	HLL / HHH	di:látor, (và:so:)|	1

Group V: CC1	
#σσσ	
H_nLL	1
H_nLH	1
$H_nH_nH_n$	1
H_nH_nH	1
HLL	1
HLH	1
HHL	1
HHH	1

Classical compound 2					
British variant 1	**British variant 2**	**American**	**#σσσ**	**Stem, morphemes**	**Pattern**
1. <(hò:.me.o:)(stá:.si.sø)>	(hò:.me)(ós.ta.si)sø	~	HLH_n / HLH	asisø	1
2. <pe(rìs.so:)(dác.ty.lø)>	pe(rís.so:)(dàc.ty)lø		LH_nH	dactylø	2

Group V: CC2	
#σσσ	
LH_nH	1
HLH_n	1
HLH	1

Monomorphemic word					
British variant 1	**British variants 2–5**	**American**	**#σσσ**	**Stem**	**Pattern**
1. <(cà.ta.ma)(**rán.nø**)*>	(cá.ta.ma)**ra**.nø		LLL	*Tamil*	1
2. <con(quís.ta)(dò:.rø)>	<(còn.quis.ta)(**dó:.rø**)*>, <con(quìs.ta)(**dó:.rø**)*>	co:n(quí:s.ta)(dò:.rø), con(quí:s.ta)(dò:.rø), 1	H_nH_nL / H_nHL / HHL	*Spanish*	2~1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Monomorphemic word					
British variant 1	**British variants 2–5**	**American**	**#σσσ**	**Stem**	**Pattern**
		~			
3. <(dè.mi.mon)(**dá:i.ne**)*>	(dè.mi)(món.da:i)ne	1 ~ 2 ~	LLH$_n$	*French*	1
4. (è.che)(vé:.ri.a)		<(è.che.ve)(rí:.a)>, <(è:.che.ve)(rí:.a)>	HLL / LLH / LLL	'Echeveri'	1
5. <(flìb.ber.ti)(gíb.be.tø)>		1 (flíb.ber.ti)(gìb.be)tø	HH$_n$L	*onomatopoeic*	1
6. <(hùl.la.ba)(**ló:o.ø**)*>	(húl.la.ba)(lò:o.ø)		H$_n$LL	*onomatopoeic*	1
7. <(jà:r.di.ni)(**é:.re**)*>	(jà:r.din-)(**é:.re**)*	(jà:r.di)(**níe.re**)*	HLL / HLH	*French*	1
8. o:(rán.gu.ta)nø	o(rán.gu.ta)nø, <o:(ràn.gu)(**tán.nø**)*>, (ò:.ran)(gú:.ta)nø, (ò:.ran)(gú:.ta:)nø		HH$_n$L / HH$_n$H / LH$_n$L	*Malay*	2
9. Af(ghá.nis)(tà:n.nø)	Af(ghá.nis.ta)nø, <Af(ghà.nis)(**tá:n.nø**)*>, <(Àf.gha.nis)(**tá:n.nø**)*>	Af(ghá.nis.ta)nø	HLH$_n$	N, Áfghan, Áfgha:n, Áfghan	2~1
10. <Ba(lù:.chis)(**tá:n.nø**)*>	<Ba(lù:.chis)(**tán.nø**)*>, Ba(lú:.chis)(tà:n.nø)	<Ba(lù:.chis)(**tán.nø**)*>	LHH$_n$	N	2
11. <(Dò:.de.ca)(**né:.se**)*>		Do:(dé.ca)(nè:.se), <Do:(dè.ca)(**né:.se**)*>	HLL	N	1~2
12. <(Mòn.te.vi)(dé:.o:)>	(Mòn.te)(ví.de.o:)	1 ~ 2~	H$_n$LL	N	1
13. (Pé.lo.pon)(nè:.se)	<(Pè.lo.pon)(**né:se**)*>		LLH$_n$	N	1

Group V: Monomorphemic			
#σσσ			
Alphabetical		**Frequency**	
LLL	2	HLL	3
LLH$_n$	2	LLL	2
LLH	1	LLH$_n$	2
LH$_n$L	1	H$_n$LL	2
LHH$_n$	1	HH$_n$L	2
H$_n$LL	2	LLH	1
H$_n$H$_n$L	1	LH$_n$L	1
H$_n$HL	1	LHH$_n$	1
HLL	3	H$_n$H$_n$L	1
HLH$_n$	1	H$_n$HL	1
HLH	1	HLH$_n$	1
HH$_n$L	2	HLH	1
HH$_n$H	1	HH$_n$H	1
HHL	1	HHL	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable		
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant		
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name		
a:	long vowel	+	dialectal	?	questionable analysis		
-	syncope	~	regular sound change in AmE	!	problematic word (stem)		
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)		
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis		
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́		

Group V: Summary			
#σσσ			
Alphabetical		**Frequency**	
LLL	7	LLL	7
LLH$_n$	2	H$_n$LL	7
LLH	1	HLL	6
LH$_n$L	2	HH$_n$L	4
LH$_n$H	1	H$_n$H$_n$L	3
LHL	1	HLH	3
LHH$_n$	1	LLH$_n$	2
H$_n$LL	7	LH$_n$L	2
H$_n$LH$_n$	1	HLH$_n$	2
H$_n$LH	1	HHL	2
H$_n$H$_n$L	3	LLH	1
H$_n$H$_n$H$_n$	1	LH$_n$H	1
H$_n$H$_n$H	1	LHL	1
H$_n$HL	1	LHH$_n$	1
HLL	6	H$_n$LH$_n$	1
HLH$_n$	2	H$_n$LH	1
HLH	3	H$_n$H$_n$H$_n$	1
HH$_n$L	4	H$_n$H$_n$H	1
HH$_n$H	1	H$_n$HL	1
HHL	2	HH$_n$H	1
HHH	1	HHH	1

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable		
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H$_n$	CVC ending in *s* or sonorant		
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name		
a:	long vowel	+	dialectal	?	questionable analysis		
-	syncope	~	regular sound change in AmE	!	problematic word (stem)		
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)		
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis		
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́		

Appendix 6: Miscellaneous

Group I—Pattern 1: #ὸσσσ			
British variant 1	**British variant 2**	**American**	**Stem, morphemes**
1. à:uto:—da—fé:			*Portuguese*
2. bè:—a:ll and énd—all			
3. là:bial—vé:lar			
4. mòther—of—pé:arl			
5. mòther—of—thóusands			
6. mòther—to—bé:			
7. mùltiple—chóice			
8. mùltum in pá:vo:			
9. nèvertheléss			
10. pà:terfamílias	pàterfamílias	pà:terfamí:lias, pàterfamí:lias	*Latin*
11. pèpper—and—sá:lt			
12. tàtterdemá:lion			
13. Àllan-a-Dá:le			N
14. Àshton-in-Má:kerfì:eld			N
15. Bà:lto:-Slavónic	Bàlto:-Slavónic		N, Slavónicic
16. Czècho:slo:vákia	Czècho:slo:vá:kia	2 1	N, Slo:vákia
17. Hàverfordwést	Hàv-rfordwést		N, west
18. Hètton-le-Hó:le			N
19. Hò:ughton-le-Spríng			N
20. Nò:vo:sibí:r**sk***			N
21. Pòulton-le-Fýlde			N
22. Rhàeto:-Ro:mánic			N, Ro:mánic ic
23. Sì:no:-Tibétan			N,Tibétan
24. Stòckton-on-Té:es		~	N
25. Tìglath-pi:lé:ser			N
26. Vàsco: de Gá:ma		Và:sco: de Gá:ma, Và:sco: de Gáma	N

Group II—Pattern 2: #σ(ὸσ)(σ́				
British variant 1	**British variant 2**	**Other British variants**	**American**	**Stem, morphemes**
1. piàno:fó:rte	pià:no:fó:rte	piàno:fó:rte:, piàno:fó:rte, p-àno:fó:rte	piàno:fó:rte:, piàno:fó:rt-, piàno:fó:rt-	piàno:, pià:no:, p-àno:, fó:rte:
2. precìsionø-má:de ^+				
3. Sièrra Mádre:				

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Group III/a—Pattern 3: #(ø.ὸ)(ὸσ)(σ́
British variant 1
1. Mònt-Sàint-Michéll
2. Sà:ult Sà:inte Marí:e
3. tèn-gàllon hátt

Group V: #σσσ				
British variant 1	**British variant 2**	**Other British variants**	**American**	**Stem, morphemes**
1. àvo:irdupó:is	<àvo:irdúpo:is>	àvoirdupó:is	àvoirdupó:is, ávoirdupò:is	*French* avoir-du-pois
2. <cìnema vérite:>	<cìnema: vérite:>		<cìnema vèrité:>	

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Appendix 7: Non-initial adjacent stresses

British variant 1	British variant 2	Stem, morphemes
1. (dè.ba:u)(ché:.e)	de.(bàu:)(ché:.e)	(ée. ø)
2. di.(vò:r)(cé:.e)	(dì.vo:r)(cé:.e)	divó:rce
3. (è.las)(tí.ci.ty)	e(làs)(tí.ci.ty)	elástic
4. e.(lèc)(trí.ci.a)nø	(è.lec)(trí.ci.a)nø	eléctric
5. e(lèc)(trí.ci.ty)	(è.lec)(trí.ci.ty)	eléctric
6. e.(lèc)(tró.ly.si)sø	(è.lec)(tró.ly.si)sø	CC2
7. es(cà)(pé:.e)	(ès.ca)(pé:.e)	escápe
8. (ì:.dea)(lís.ti.cø)	i:.(dèa)(lís.ti.cø)	i:déal

Other words with internal clash that are not in Wells (1990)

(not in the dictionary or not given with clash):

Burzio (1994: 99): *aràchnólogy, egỳptólogy, odòntólogy*

Halle—Vergnaud (1987: 233): *Hàlicàrnássus, ìncàntátion, ìncàrnátion, òstèntátion*

á	primary stressed vowel	ø	null segment	L, H	light syllable, heavy syllable
à	secondary stressed vowel	@	optional secondary stress on the 1st σ	H_n	CVC ending in *s* or sonorant
a	full vowel in unstressed σ	&	optinal full (&), long (^) vowel in the 1st σ	B, N	bound stem, name
a:	long vowel	+	dialectal	?	questionable analysis
-	syncope	~	regular sound change in AmE	!	problematic word (stem)
( )	foot boundaries	**ab**	problematic / exceptional for B94	*italics*	stress-preserving (Group IV)
.	syllable boundary	*	problematic word for my analysis	‖	both CC1 and CC2 analysis
|	domain boundary	1, 2	1st / 2nd BrE variant appears in AmE	< >	Group V variant with #σσσσ́

Appendix 8: Stems of *-ative* words

1. ablá:te 4
2. ablá:te 4
3. accú:mulà:te 1
4. accú:se 4
5. admínistrà:te 2_n
6. advé:rse$_V$ 4
7. affí:rm 4
8. áffricà:te 1
9. agglú:tinà:te 1
10. allíterà:te 1
11. á:lternà:te 2_n
12. amé:liorà:te 1
13. appré:cià:te 1
14. á:rgument 6
15. assímilà:te 1
16. assó:cià:te 1
17. au:thórity 6
18. cálculà:te 1
19. cálm 6
20. (carminare) 3
21. cá:use 4
22. cógità:te 1
23. colláborà:te 1
24. commémorà:te 1
25. commíserà:te 1
26. commú:nicà:te 1
27. commú:te 4
28. compá:re 4
29. connó:te 4
30. consé:rve 4
31. consúlt 4
32. cóntemplà:te 2_n
33. co:óperà:te 1
34. cópulà:te 1
35. córrelà:te 1
36. corróborà:te 1
37. creá:te 4
38. cú:mulà:te 1
39. cú:re 4
40. declá:re 4
41. décorà:te 1
42. degénerà:te 1
43. delíberà:te 1
44. delímità:te 1
45. demonstrà:te 2_n
46. denó:te 4
47. derí:ve 4
48. desíderà:te 1
49. deté:rmine 5
50. discrímìnà:te 1
51. do(:)ná:te 4 || dó:nà:te 5, do:ná:te 4
52. dú:re 4
53. éducà:te 1
54. elá:te 4
55. émanà:te 1
56. evó:ke 4
57. exhó:rt 4
58. explóit 4
59. exploó:re 4
60. féderà:te 1
61. fígure 5
62. fíx 4 / fíxà:te 2
63. fó:rm 4
64. (frícà:te) 3
65. génerà:te 1
66. grávità:te 1
67. (hortare) 3
68. íllustrà:te 2_n
69. imágine 5
70. ímità:te 1
71. (ímperà:te) 3
72. (commú:nicative*) 1
73. índicà:te 1
74. infó:rm 4
75. inítià:te 1
76. ínno(:)và:te 1
77. (óperative*) 1
78. íntegrà:te 2
79. inté:rpret 5
80. intérrogà:te 1
81. invéstigà:te 1
82. íterà:te 1
83. láx 4
84. législà:te 2_n
85. lo:cá:te 4
86. (lúcrate) 3
87. manípulà:te 1
88. médità:te 1
89. múltiply: 7
90. narrá:te 4
91. negá:te 4
92. nóminà:te 1
93. nó:rma 6
94. óperà:te 1
95. ópt 4
96. óxidà:te 1
97. pállià:te 1
98. (pejórà:te) 3
99. pénetrà:te 1
100. (óperative*) 1
101. prédicà:te 1
102. prepá:re 4
103. (pre+rogare) 3
104. presé:rve 4
105. prevént 4
106. pró:be 4
107. própagà:te 1
108. provó:ke 4
109. pú:rge 4
110. (putat-us) 3
111. quálity 6
112. quántity 6
113. recú:perà:te 1
114. refó:rm 4
115. regénerà:te 1
116. relá:te 4
117. rémonstrà:te 2_n
118. remú:nerà:te 1
119. repá:re || repáre 4
120. rèpresént 4
121. restó:re 4
122. ro:tá:te 4 || ró:tà:te 5
123. rú:minà:te 1
124. sedá:te 4
125. sépará:te 1
126. spéculà:te 1
127. stímulà:te 1
128. tá:lk 4
129. (témpt) 3
130. úlcerà:te 1
131. (commú:nicative*) 1
132. (demónstrative*) 2_n
133. végetà:te 1
134. vi:tú:perà:te 1
135. (vocare) 3

|| American pattern follows (where different from BrE)

1 (σ L)(à:.te)#

2 (σ H)(à:.te)#

2_n (σ H_n)(à:.te)#

3 bound stem

4 (H ϕ)#

5 σ́ σ ϕ #

6 non-verbal stem

7 verbal stem with a different from types 1-2 and 4-5

(operative*) the item is derived from this *-ative* word by prefixation

Type		Stem, morphemess
1 (σ L)(à:.te) #		accú:mulà:te, áffricà:te, agglú:tinà:te, allíterà:te, amé:liorà:te, appré:cià:te, assímilà:te, assó:cià:te, cálculà:te, cógità:te, colláborà:te, commémorà:te, commíserà:te, commú:nicà:te, co:óperà:te, cópulà:te, córrelà:te, corróborà:te, cú:mulà:te, décorà:te, degénerà:te, delíberà:te, delímità:te, discríminà:te, desíderà:te, éducà:te, émanà:te, féderà:te, génerà:te, grávità:te, ímità:te, (commú:nicative*), índicà:te, inítià:te, ínno(:)và:te, (óperative*), intérrogà:te, invéstigà:te, íterà:te, manípulà:te, médità:te, nóminà:te, óperà:te, óxidà:te, pállià:te, pénetrà:te, (óperative*), prédicà:te, própagà:te, recú:perà:te, regénerà:te, remú:nerà:te, rú:minà:te, séparà:te, spéculà:te, stímulà:te, úlcerà:te, (commú:nicative*), végetà:te, vi:tú:perà:te
2 (σH)(à:.te) #		fíxà:te, íntegrà:te
2_n (σH_n)(à:.te) #		admínistrà:te, á:lternà:te, cóntemplà:te, demonstrà:te, íllustrà:te, législà:te, rémonstrà:te, (demónstrative*)
3 bound		(carminare), (frícà:te), (hortare), (ímperà:te), (lúcrate), (pejórà:te), (pre+rogare), (putat-us), (témpt), (vocare)
4 (H ø) #	a	accú:se, advé:rse$_V$, affí:rm, cá:use, commú:te, compá:re, connó:te, consé:rve, cú:re, denó:te, derí:ve, dú:re, evó:ke, exhó:rt, explóit, exploó:re, fó:rm, infó:rm, prepá:re, presé:rve, pró:be, provó:ke, pú:rge, refó:rm, repái:r, restó:re, tá:lk
	b	ablá:te, ablá:te, creá:te, do(:)ná:te, elá:te, lo:cá:te, narrá:te, negá:te, relá:te, ro:tá:te, sedá:te
	c	consúlt, fíx, láx, ópt, prevént, repáir
	d	rèpresént
5 $\acute{\sigma}\sigma$ø#		deté:rmine, dó:nà:te, fígure, imágine, inté:rpret, ró:tà:te
6 non-verbal		á:rgument, au:thórity, cálm, có:mbat, nó:rma, quálity, quántity
7 other		múltiply:

|| American pattern follows (where different from BrE)	4 (H ϕ)#
1 (σ L)(à:.te)#	5 $\acute{\sigma}$ σ ϕ #
2 (σ H)(à:.te)#	6 non-verbal stem
2_n (σ H_n)(à:.te)#	7 verbal stem with a different from types 1-2 and 4-5
3 bound stem	(operative*) the item is derived from this *-ative* word by prefixation

Appendix 9: The analysis of *-ative* words

1. 1.(áb.la.ti)ve$_1$ (*case*) || 1.(áb.la.ti)ve$_1$ (*case*)
2. 1.ab(lá:.ti)ve$_2$ (*ablating*) || 1.ab(lá:.ti)ve$_2$ (*ablating*)
3. 1.ac(cú:.mu.la)ti.ve, 2.ac(cú:.mu)(là:.ti)ve || 3.ac(cú:.mu)(là:.ti)ve, 4.ac(cú:.mu.la)ti.ve
4. 1.ac(cú:.sa.ti)ve || 1.ac(cú:.sa.ti)ve
5. 1.ad(mí.nis.tra)ti.ve, 2.ad(mí.nis.tra)ti.ve, 3.ad(mí.nis)(trà:.ti)ve || 4.ad(mí.nis)(trà:.ti)ve, 5.ad(mí.nis.tra)ti.ve
6. 1.ad(vé:r.sa.ti)ve, 2.ad(vé:r.sa.ti)ve || 1.ad(vé:r.sa.ti)ve
7. 1.af(fí:r.ma.ti)ve || 1.af(fí:r.ma.ti)ve
8. 1.af(frí.ca.ti)ve, 2.(áf.fri)(cà:.ti)ve || 1.af(frí.ca.ti)ve
9. 1.ag(glú:.ti.na)ti.ve, 2.ag(glú:.ti)(nà:.ti)ve || 3.ag(glú:.ti)(nà:.ti)ve, 4.ag(glú:.ti.na)ti.ve
10. 1.al(lí.te.ra)ti.ve, 2.al(lí.te)(rà:ti)ve || 3.al(lí.te.ra)ti.ve, 4.al(lí.te)(rà:.ti)ve
11. 1.al(té:r.na.ti)ve || 1.al(té:r.na.ti)ve
12. 1.a(mé:.li.o)(rà:.ti)ve, 2.a(mé:.li.o)ra.ti.ve || 1.a(mé:.li.o)(rà:.ti)ve
13. 1.ap(pré:.ci.a)ti.ve, 2.ap(pré:.ci)(à:.ti)ve, 3.ap(pré:.c-.a)ti.ve || 4.ap(pré:.c-.a)ti.ve, 5.ap(pré.c-.a)ti.ve, 6.ap(pré:.ci)(à:.ti)ve
14. 1.(àr.gu)(mén.ta.ti)ve || 1.(àr.gu)(mén.ta.ti)ve
15. 1.as(sí.mi.la)ti.ve, 2.as(sí.mi)(là:.ti)ve || 3.as(sí.mi)(là:.ti)ve, 4.as(sí.mi.la)ti.ve
16. 1.as(só:.ci.a)ti.ve, 2.as(só:.ci)(à:.ti)ve || 3.as(só:.ci)(à:.ti)ve, 4.as(só:.ci.a)ti.ve
17. 1.au:(thó.ri.ta)ti.ve, 2.au:(thó.ri)(tà:.ti)ve || 3.au:(thó.ri)(tà:.ti)ve
18. 1.(cál.cu.la)ti.ve, 2.(cál.cu)(là:.ti)ve || 3.(cál.cu)(là:.ti)ve
19. (cál.ma.ti)ve, 2.(cá:l.ma.ti)ve || 1.(cál.ma.ti)ve
20. 1.(cá:r.mi.na)ti.ve || 2. ca:r(mí.na.ti)ve, 3.(cá:r.mi)(nà:.ti)ve
21. 1.(cá:u.sa.ti)ve || 1.(cá:u.sa.ti)ve
22. 1.(có.gi.ta)ti.ve, 2.(có.gi)(tà:.ti)ve || 3.(có:.gi)(tà:.ti)ve
23. 1.col(lá.bo.ra)ti.ve, 2.col(lá.bo)(rà:.ti)ve || 3.col(lá.bo)(rà:.ti)ve, 4.col(lá.bo.ra)ti.ve
24. 1.com(mé.mo.ra)ti.ve, 2.com(mé.mo)(rà:.ti)ve || 3.com(mé.mo.ra)ti.ve, 4.com(mé.mo)(rà:.ti)ve
25. 1.com(mí.se.ra)ti.ve, 2.com(mí.se)(rà:.ti)ve || 3.com(mí.se)(rà:.ti)ve
26. 1.com(mú:.ni.ca)ti.ve, 2.com(mú:.ni)(cà:.ti)ve || 3.com(mú:.ni)(cà:.ti)ve, 4.com(mú:.ni.ca)ti.ve
27. 1.com(mú:.ta.ti)ve, 2.(cóm.mu)(tà:.ti)ve || 3.(có:m.mu)(tà:.ti)ve, 4.com(mú:.ta.ti)ve
28. 1.com(pá.ra.ti)ve, 2.com(pá.ra.ti)ve +@ || 1.com(pá.ra.ti)ve
29. 1.(cón.no)(tà:.ti)ve, 2.(cón.no:)(tà:.ti)ve, 3.con(nó:.ta.ti)ve, 4,con(nó:.ta.ti)ve || 5.(có:n.no)(tà:.ti)ve, 6.con(nó:.ta.ti)ve
30. 1.con(sé:r.va.ti)ve, 2con(sé:r.va.ti)ve + @ || 1.con(sé:r.va.ti)ve
31. 1.con(súl.ta.ti)ve, 2.con(súl.ta.ti)ve + @ || 3.con(súl.ta.ti)ve, 4.(cón.sul)(tà:.ti)ve
32. 1.con(tém.pla.ti)ve, 2.con(tém.pla.ti)ve + @, 3.(cón.tem)(plà:.ti)ve, 4.(cón.tem)(plà:.ti)ve, 5.(cón.tem.pla)ti.ve || 6.con(tém.pla.ti)ve, 7.(cón.tem)(plà:.ti)ve, 8.(cón.tem)(plà:.ti)ve
33. 1.co:(ó.pe.ra)ti.ve || 2.co:(ó:.pe.ra)ti.ve, 3.co:(ó:.pe)(rà:.ti)ve
34. 1.(có.pu.la)ti.ve, 2.(có.pu)(là:.ti)ve || 3.(có.pu.la)ti.ve, 4.(có.pu)(là:.ti)ve
35. 1.cor(ré.la.ti)ve, 2.cor(ré.la.ti)ve || 1.cor(ré.la.ti)ve
36. 1.cor(ró.bo.ra)ti.ve, 2.cor(ró.bo)(rà:.ti)ve || 3.cor(ró:.bo)(rà:.ti)ve, 4.cor(ró:.bo.ra)ti.ve
37. 1.cre(á:.ti)ve, 2.(ϕ.crè:)(á:.ti)ve || 1.cre(á:.ti)ve

á	primary stress	||	American pattern follows (if same as BrE 1, with number 1)
à	secondary stress	(*italics*)	meaning (where relevant)
a:, a(:)	long vowel, optionally long vowel	+	British English non-RP
a	full vowel in unstressed syllable	@	secondary stress (with a full V) on the first syllable is optional (ø.$\grave{\sigma}$)
-	syncope	word$_1$	first meaning
*	stress shift likely (unstable form)		

38. 1.(cú:.mu.la)ti.ve, 2.(cú:.mu)(là:.ti)ve || 1.(cú:.mu.la)ti.ve
39. 1.(cú:.ra.ti)ve || 1.(cú:.ra.ti)ve
40. 1.dec(lá.ra.ti)ve, 2.de:c(lá.ra.ti)ve + || 1.dec(lá.ra.ti)ve
41. 1.(dé.co.ra)ti.ve || 2.(dé.co.ra)ti.ve, 3.(dé.co)(rà:.ti)ve
42. 1.de(gé.ne.ra)ti.ve, 2.de:(gé.ne.ra)ti.ve +, 3.de(gé.ne)(rà:.ti)ve || 4.de(gé.ne.ra)ti.ve, 5.de(gé.ne)(rà:.ti)ve
43. 1.de(lí.be.ra)ti.ve, 2.de:(lí.be.ra)ti.ve + || 3.de(lí.be)(rà:.ti)ve, 4.de(lí.be.ra)ti.ve
44. 1.de(lí.mi.ta)ti.ve, 2.de:(lí.mi.ta)ti.ve +, 3.de(lí.mi)(tà:.ti)ve || 4.de(lí.mi)(tà:.ti)ve
45. 1.de(món.stra.ti)ve || 2.de(mó:n.stra.ti)ve
46. 1.de(nó:.ta.ti)ve, 2.(ϕ.dè:)(nó:.ta.ti)ve, 3.(dé.no)(tà:.ti)ve || 4.(dé.no)(tà:.ti)ve, 5.de(nó:.ta.ti)ve
47. 1.de(rí.va.ti)ve, 2.de:(rí.va.ti)ve + || 1.de(rí.va.ti)ve
48. 1.de(sí.de.ra)ti.ve || 2. de(sí.de)(rà:.ti)ve, 3. de(sí.de.ra)ti.ve
49. 1.de(té:r.mi.na)ti.ve, 2.de:(té:r.mi.na)ti.ve + || 3.de(té:r.mi)(nà:.ti)ve, 4.de(té:r.mi.na)ti.ve
50. 1.dis(crí.mi.na)ti.ve 2.dis(crí.mi)(nà:.ti)ve || 3. dis(crí.mi)(nà:.ti)ve 4.dis(crí.mi.na)ti.ve
51. 1.(dó:.na.ti)ve, 2.(dó.na.ti)ve || 3.(dó:.na.ti)ve
52. 1.(dú:.ra.ti)ve || 2.(dú.ra.ti)ve
53. 1.(é.du.ca)ti.ve, 2.(é.du)(cà:.ti)ve || 3.(é.du)(cà:.ti)ve
54. 1.(é:.la.ti)ve, 2.e(lá:.ti)ve, 3.e(lá:.ti)ve || 1.(é:.la.ti)ve
55. 1.(é.ma)(nà:.ti)ve, 2.(é.ma.na)ti.ve || 3.(é.ma)(nà:.ti)ve
56. 1.e(vó.ca.ti)ve || 2.e(vó:.ca.ti)ve
57. 1.ex(hó:r.ta.ti)ve || 1.ex(hó:r.ta.ti)ve
58. 1.ex(plói.ta.ti)ve @ || 1.ex(plói.ta.ti)ve
59. 1.ex(pló.ra.ti)ve 2.ex(pló:.ra.ti)ve || 3. ex(pló:.ra.ti)ve
60. 1.(fé.de.ra)ti.ve, 2.(fé.de)(rà:.ti)ve || 3.(fé.de)(rà:.ti)ve, 4.(fé.de.ra)ti.ve
61. 1.(fí.gu.ra)ti.ve || 1.(fí.gu.ra)ti.ve
62. 1.(fí.xa.ti)ve || 1.(fí.xa.ti)ve
63. 1.(fó:r.ma.ti)ve || 1.(fó:r.ma.ti)ve
64. 1.(frí.ca.ti)ve || 1.(frí.ca.ti)ve
65. 1.(gé.ne.ra)ti.ve || 2.(gé.ne.ra)ti.ve, 3.(gé.ne)(rà:.ti)ve
66. 1.grávità:.ti)ve || 1.grávità:.ti)ve
67. 1.(hó:r.ta.ti)ve, 2.ho:r(tá:.ti)ve || 1.(hó:r.ta.ti)ve
68. 1.(íl.lus.tra)ti.ve, 2.(íl.lus)(trà:.ti)ve, 3.il(lú:s.tra.ti)ve || 4.il(lú:s.tra.ti)ve, 5.(íl.lus)(trà:.ti)ve
69. 1.i(má.gi.na)ti.ve || 2.i(má.gi.na)ti.ve, 3.i(má.gi)(nà:.ti)ve
70. 1.(í.mi.ta)ti.ve, 2.(í.mi)(tà:.ti)ve || 3.(í.mi)(tà:.ti)ve
71. 1.im(pé.ra.ti)ve || 1.im(pé.ra.ti)ve
72. 1.(ìn.com)(mú:.ni.ca)ti.ve*, 2.(ìn.com)(mú:.ni)(cà:.ti)ve || 3.(ìn.com)(mú:.ni)(cà:.ti)ve, 4.(ìn.com)(mú:.ni.ca)ti.ve
73. 1.in(dí.ca.ti)ve || 1.in(dí.ca.ti)ve
74. 1.in(fó:r.ma.ti)ve || 1.in(fó:r.ma.ti)ve
75. 1.i(ní.t-.a)ti.ve, 2.i(ní.ti.a)ti.ve || 1.i(ní.t-.a)ti.ve
76. 1.(ín.no(:))(và:.ti)ve, 2.(ín.no(:).va)ti.ve, 3.in(nó:.va.ti)ve || 4.(ín.no)(và:.ti)ve
77. 1.i(nó.pe.ra)ti.ve @, 2.i(nó.pe)(rà:.ti)ve || 3.i(nó:.pe.ra)ti.ve, 4.i(nó:.pe)(rà:.ti)ve
78. 1.(ín.te)(grà:.ti)ve || 1.(ín.te)(grà:.ti)ve

á	primary stress	||	American pattern follows (if same as BrE 1, with number 1)
à	secondary stress	(*italics*)	meaning (where relevant)
a:, a(:)	long vowel, optionally long vowel	+	British English non-RP
a	full vowel in unstressed syllable	@	secondary stress (with a full V) on the first syllable is optional (ø.ờ)
-	syncope	word$_1$	first meaning
*	stress shift likely (unstable form)		

79. 1.in(té:r.pre.ta)ti.ve, 2.in(té:r.pre)(tà:.ti)ve || 3.in(té:r.pre)(tà:.ti)ve, 4..in(té:r.pre.ta)ti.ve
80. 1.(ìn.ter)(ró.ga.ti)ve* || 2.(ìn.ter)(ró:.ga.ti)ve
81. 1.in(vés.ti.ga)ti.ve, 2.in(vés.ti)(gà:.ti)ve || 3.in(vés.ti)(gà:.ti)ve
82. 1.(í.te.ra)ti.ve, 2.(í.te)(rà:.ti)ve || 3.(í.te)(rà:.ti)ve, 4.(í.te.ra)ti.ve
83. 1.(láx.a.ti)ve || 1.(láx.a.ti)ve
84. 1.(lé.gis.la)ti.ve, 2.(lé.gis)(là:.ti)ve || 3.(lé.gis)(là:.ti)ve, 4.(lé.gis.la)ti.ve
85. 1.(ló.ca.ti)ve || 2.(ló:.ca.ti)ve
86. 1.(lú:c.ra.ti)ve ! || 1.(lú:c.ra.ti)ve !
87. 1.ma(ní.pu.la)ti.ve, 2.ma(ní.pu)(là:.ti)ve || 3.ma(ní.pu)(là:.ti)ve, 4.ma(ní.pu.la)ti.ve
88. 1.(mé.di.ta)ti.ve, 2.(mé.di)(tà:.ti)ve || 3.(mé.di)(tà:.ti)ve
89. 1.(mùl.ti)(plí.ca.ti)ve 2.(múl.ti.pli)(cà:.ti)ve || 3.(mùl.ti)(plí.ca.ti)ve 4.(múl.ti.pli)(cà:.ti)ve
90. 1.(nár.ra.ti)ve || 1.(nár.ra.ti)ve
91. 1.(né.ga.ti)ve || 1.(né.ga.ti)ve
92. 1.(nó.mi.na)ti.ve || 3.(nó:.mi.na)ti.ve
93. 1.(nó:r.ma.ti)ve || 1.(nó:r.ma.ti)ve
94. 1.(ó.pe.ra)ti.ve, 2.(ó.pe)(rà:.ti)ve || 3.(ó:.pe.ra)ti.ve, 4.(ó:.pe)(rà:.ti)ve [1]
95. 1.(óp.ta.ti)ve, 2.op(tá.ti.ve) || 3.(ó:p.ta.ti)ve
96. 1.(óx.id)(à:.ti)ve || 2.(ó:x.i)(dà:.ti)ve
97. 1.(pál.li.a)ti.ve || 2.(pál.li)(à:.ti)ve, 3.(pál.li.a)ti.ve
98. 1.pe(jó.ra.ti)ve, 2.(pé:.jo.ra)ti.ve || 3.pe(jó:.ra.ti)ve
99. 1.(pé.ne.tra)ti.ve, 2.(pé.ne)(trà:.ti)ve || 3.(pé.ne)(trà:.ti)ve
100.1.(ϕ.pò:s)(tó.pe.ra)ti.ve*, 2.(ϕ:pò:s)(tó.pe)(rà:.ti)ve * || 3.(ϕ.pò:s)(tó:.pe.ra)ti.ve*
101.1.pre(dí.ca.ti)ve, 2.pre:(dí.ca.ti)ve + || 3.(pré.di)(cà:.ti)ve
102.1.pre(pá.ra.ti)ve, 2.pre:(pá.ra.ti)ve + || 1.pre(pá.ra.ti)ve
103.1.pre(ró.ga.ti)ve 2.pre:.(ró.ga.ti)ve + || 3.pre(ró:.ga.ti)ve
104.1.pre(sé:r.va.ti)ve, 2.pre:(sé:r.va.ti)ve + || 1.pre(sé:r.va.ti)ve
105.1.pre(vén.ta.ti)ve, 2.pre:(vén.ta.ti)ve + || 1.pre(vén.ta.ti)ve
106.1.(pró:.ba.ti)ve || 1.(pró:.ba.ti)ve
107.1.(pró.pa)(gà:.ti)ve || 2.(pró:.pa)(gà:.ti)ve
108.1.pro(vó.ca.ti)ve, 2.pro:(vó.ca.ti)ve || 3.pro(vó:.ca.ti)ve
109.1.(pú:r.ga.ti)ve || 1.(pú:r.ga.ti)ve
110.1.(pú:.ta.ti)ve || 1.(pú:.ta.ti)ve
111.1.(quá.li.ta)ti.ve, 2.(quá.li)(tà:.ti)ve || 3.(quá:.li)(tà:.ti)ve
112.1.(quán.ti.ta)ti.ve, 2.(quán.ti)(tà:.ti)ve || 3.(quá:n.ti)(tà:.ti)ve
113.1.re(cú:.pe.ra)ti.ve, 2.re:(cú:.pe.ra)ti.ve +, 3.re(cú:.pe)(rà:.ti)ve || 1.re(cú:.pe.ra)ti.ve
114.1.re(fó:r.ma.ti)ve, 2.re:(fó:r.ma.ti)ve + || 1.re(fó:r.ma.ti)ve
115.1.re(gé.ne.ra)ti.ve, 2.re:(gé.ne.ra)ti.ve +, 3.re(gé.ne)(rà:.ti)ve || 4.re(gé.ne.ra)ti.ve, 5.re(gé.ne)(rà:.ti)ve
116.1.(ré.la.ti)ve || 1.(ré.la.ti)ve
117.1.re(món.stra.ti)ve, 2.re:(món.stra.ti)ve + || 3.re(mó:n.stra.ti)ve

[1] *-à:tive* is more common for the noun

á	primary stress	||	American pattern follows (if same as BrE 1, with number 1)
à	secondary stress	(*italics*)	meaning (where relevant)
a:, a(:)	long vowel, optionally long vowel	+	British English non-RP
a	full vowel in unstressed syllable	@	secondary stress (with a full V) on the first syllable is optional (ø.ờ)
-	syncope	word$_1$	first meaning
*	stress shift likely (unstable form)		

118.1.re(mú:.ne.ra)ti.ve, 2.re:(mú:.ne.ra)ti.ve, 3.re(mú:.ne)(rà:.ti)ve || 4.re(mú:.ne.ra)ti.ve, 5.re(mú:.ne)(rà:.ti)ve
119.1.re(pá.ra.ti)ve, 2.re:(pá.ra.ti)ve + || 1.re(pá.ra.ti)ve
120.1.(rèp.re)(sén.ta.ti)ve* || 1.(rèp.re)(sén.ta.ti)ve*
121.1.res(tó:.ra.ti)ve, 2.re:s(tó:.ra.ti)ve +, 3.res(tó.ra.ti)ve, 4.(rés.to)(rà:.ti)ve || 1.res(tó:.ra.ti)ve
122.1.ro:(tá:.ti)ve, 2.(ró:.ta.ti)ve || 3.(ró:.ta.ti)ve
123.1.(rú:.mi.na)ti.ve, 2.(rú:.mi)(nà:.ti)ve || 1.(rú:.mi.na)ti.ve
124.1.(sé.da.ti)ve || 1.(sé.da.ti)ve
125.1.(sé.pa.ra)ti.ve || 2.(sé.pa.ra)ti.ve, 3.(sé.pa)(rà:.ti)ve
126.1.ϕs(pé.cu.la)ti.ve, 2.ϕs(pé.cu)(là:.ti)ve || 3.ϕs(pé.cu)(là:.ti)ve, 4.ϕs(pé.cu.la)ti.ve
127.1.ϕs(tí.mu.la)ti.ve, 2.ϕs(tí.mu)(là:.ti)ve || 3.ϕs(tí.mu)(là:.ti)ve
128.1.(tá:l.ka.ti)ve || 1.(tá:l.ka.ti)ve
129.1.(tén.ta.ti)ve || 1.(tén.ta.ti)ve
130.1.(úl.ce.ra)ti.ve, 2.(úl.ce)(rà:.ti)ve || 3.(úl.ce)(rà:.ti)ve
131.1.(ùn.com)(mú:.ni.ca)ti.ve*, 2.(ùn.com)(mú:.ni)(cà:.ti)ve || 3.(ùn.com)(mú:.ni)(cà:.ti)ve, 4.(ùn.com)(mú:.ni.ca)ti.ve
132.1.(ùn.de)(món.stra.ti)ve*, 2.(ùn.de:)(món.stra.ti)ve + || 3.(ùn.de)(mó:n.stra.ti)ve
133.1.(vé.ge.ta)ti.ve, 2.(vé.ge)(tà:.ti)ve || 3.(vé.ge)(tà:.ti)ve
134.1.vi(tú:.pe.ra)ti.ve, 2.vi(tú:.pe.ra)ti.ve, 3.vi:(tú:.pe)(rà:.ti)ve || 4.vi:(tú:.pe.ra)ti.ve, 5.vi:(tú:.pe)(rà:.ti)ve
135.1.(vó.ca.ti)ve || 2.(vó:.ca.ti)ve

á	primary stress	||	American pattern follows (if same as BrE 1, with number 1)
à	secondary stress	(*italics*)	meaning (where relevant)
a:, a(:)	long vowel, optionally long vowel	+	British English non-RP
a	full vowel in unstressed syllable	@	secondary stress (with a full V) on the first syllable is optional (ø.σ̆)
-	syncope	$word_1$	first meaning
*	stress shift likely (unstable form)		

Appendix 10: Problematic *-ative* words

Group 1: V̌.Cative — σ́ative

Line #	Relevant variants (36 items)
8.	1.af(frí.ca.ti)ve || 1.af(frí.ca.ti)ve
28.	1.com(pá.ra.ti)ve, 2.com(pá.ra.ti)ve +@ || 1.com(pá.ra.ti)ve
35.	1.cor(ré.la.ti)ve, 2.cor(ré.la.ti)ve || 1.cor(ré.la.ti)ve
40.	1.dec(lá.ra.ti)ve, 2.de:c(lá.ra.ti)ve + || 1.dec(lá.ra.ti)ve
47.	1.de(rí.va.ti)ve, 2.de:(rí.va.ti)ve + || 1.de(rí.va.ti)ve
56.	1.e(vó.ca.ti)ve
59.	1.ex(pló.ra.ti)ve
71.	1.im(pé.ra.ti)ve || 1.im(pé.ra.ti)ve
73.	1.in(dí.ca.ti)ve || 1.in(dí.ca.ti)ve
80.	1.(ìn.ter)(ró.ga.ti)ve*
89.	1.(mùl.ti)(plí.ca.ti)ve || 3.(mùl.ti)(plí.ca.ti)ve
101.	1.pre(dí.ca.ti)ve, 2.pre:(dí.ca.ti)ve +
102.	1.pre(pá.ra.ti)ve, 2.pre:(pá.ra.ti)ve + || 1.pre(pá.ra.ti)ve
103.	1.pre(ró.ga.ti)ve 2.pre:. (ró.ga.ti)ve +
108.	1.pro(vó.ca.ti)ve, 2.pro:(vó.ca.ti)ve
119.	1.re(pá.ra.ti)ve, 2.re:(pá.ra.ti)ve + || 1.re(pá.ra.ti)ve
121.	3.res(tó.ra.ti)ve ||

Group 2: V̌. $C_{obstr.}$ative — σ́σative

Line #	Relevant variants (20 items)
17.	1.au:(thó.ri.ta)ti.ve
22.	1.(có.gi.ta)ti.ve
26.	1.com(mú:.ni.ca)ti.ve || 4.com(mú:.ni.ca)ti.ve
44.	1.de(lí.mi.ta)ti.ve, 2.de:(lí.mi.ta)ti.ve +
53.	1.(é.du.ca)ti.ve
70.	1.(í.mi.ta)ti.ve
72.	1.(ìn.com)(mú:.ni.ca)ti.ve* || 4.(ìn.com)(mú:.ni.ca)ti.ve
76.	2.(ín.no(:).va)ti.ve
79.	1.in(té:r.pre.ta)ti.ve || 4..in(té:r.pre.ta)ti.ve
81.	1.in(vés.ti.ga)ti.ve
88.	1.(mé.di.ta)ti.ve
111.	1.(quá.li.ta)ti.ve
112.	1.(quán.ti.ta)ti.ve
131.	1.(ùn.com)(mú:.ni.ca)ti.ve* || 4.(ùn.com)(mú:.ni.ca)ti.ve
133.	1.(vé.ge.ta)ti.ve

á	primary stress	||	American pattern follows (if same as BrE 1, with number 1)
à	secondary stress	(*italics*)	meaning (where relevant)
a:, a(:)	long vowel, optionally long vowel	+	British English non-RP
a	full vowel in unstressed syllable	@	secondary stress (with a full V) on the first syllable is optional (ø.σ̆)
-	syncope	$word_1$	first meaning
*	stress shift likely (unstable form)		

Group 3: C.Cative — σ́σative

Line # **Relevant variants (2 items)**

84. 1.(lé.gis.la)ti.ve || 4.(lé.gis.la)ti.ve

Group 4: C.CCative — σ́σative

Line # **Relevant variants (5 items)**

5. 1.ad(mí.nis.tra)ti.ve, 2.ad(mí.nis.tra)ti.ve || 5.ad(mí.nis.tra)ti.ve

32. 5.(cón.tem.pla)ti.ve ||

68. 1.(íl.lus.tra)ti.ve ||

Group 5: V̌.ative — σ́σative

Line # **Relevant variants (11 items)**

13. 1.ap(pré:.ci.a)ti.ve, 3.ap(pré:.c-.a)ti.ve || 4.ap(pré:.c-.a)ti.ve, 5.ap(pré.c-.a)ti.ve

16. 1.as(só:.ci.a)ti.ve || 4.as(só:.ci.a)ti.ve

75. 1.i(ní.t-.a)ti.ve, 2.i(ní.ti.a)ti.ve || 1.i(ní.t-.a)ti.ve

97. 1.(pál.li.a)ti.ve || 3.(pál.li.a)ti.ve

Group 6: V̌.C$_{obstr.}$ative — σ́ative

Line # **Relevant variants (14 items)**

8. 1.af(frí.ca.ti)ve || 1.af(frí.ca.ti)ve

64. 1.(frí.ca.ti)ve || 1.(frí.ca.ti)ve

80. 1.(ìn.ter)(ró.ga.ti)ve*

91. 1.(né.ga.ti)ve || 1.(né.ga.ti)ve

101. 1.pre(dí.ca.ti)ve, 2.pre:(dí.ca.ti)ve +

103. 1.pre(ró.ga.ti)ve 2.pre:. (ró.ga.ti)ve +

124. 1.(sé.da.ti)ve || 1.(sé.da.ti)ve

136. 1.(vó.ca.ti)ve

á primary stress
à secondary stress
a:, a(:) long vowel, optionally long vowel
<u>a</u> full vowel in unstressed syllable
\- syncope
* stress shift likely (unstable form)
|| American pattern follows (if same as BrE 1, with number 1)
(*italics*) meaning (where relevant)
\+ British English non-RP
@ secondary stress (with a full V) on the first syllable is optional (ø.σ̀)
word$_1$ first meaning

Appendix 11: The analysis of *-atory* words

1. 1.ac(clá.ma.to)ry || 2.ac(clá.ma)(tò:.ry)
2. 1.ac(cú:.sa.to)ry 2.(àc.cu)(sá:.to.ry) || 3.ac(cú:.sa)(tò:.ry)
3. 1.(à.du)(lá:.to.ry) 2.(á.du)(là:.to)ry || 3.(á.du.la)(tò:.ry)
4. 1.(à.le)(á:.to.ry) 2.(á:.le.a)to.ry $ || 3.(á:.le.a)(tò:.ry)
5. 1.(á.ma.to)ry || 2.(á.ma)(tò:.ry)
6. 1.(àm.bu)(lá:.to.ry) 2.(ám.bu)(là:.to)ry || 3.(ám.bu.la)(tò:.ry)
7. 1.an(nún.ci.a)to.ry $ 2.an(nùn.ci)(á:.to.ry) || 3.an(nún.ci.a)(tò:.ry)
8. 1.an(tí.ci.pa)to.ry $ 2.an(tì.ci)(pá:.to.ry) 3.(àn.ti.ci)(pá:.to.ry) || 4.an(tí.ci.pa)(tò:.ry)
9. 1.(àp.pro:)(bá:.to.ry) || 2.ap(pró:.ba)(tò:.ry) 3.(áp.pro.ba)(tò:.ry)
10. 1.ar(tí.cu.la)to.ry $ 2.ar(tì.cu)(lá:.to.ry) 3.ar(tí.cu)(là:.to)ry || 4.ar(tí.cu.la)(tò:.ry)
11. 1.as(sí.mi.la)to.ry $ 2.as(sì.mi)(lá:.to.ry) || 3.as(sí.mi.la)(tò:.ry)
12. 1.(cè.le)(brá:.to.ry) 2.(cé.le)(brà:.to)ry 3.(cé.le.bra)to.ry $ || 4.(cé.le.bra)(tò:.ry) 5.ce(lé.bra)(tò:.ry)
13. 1.(cì:r.cu)(lá:.to.ry) 2.(cí:r.cu.la)to.ry $ || 3.(cí:r.cu.la)(tò:.ry)
14. 1.(clà.ri.fi)(cá:.to.ry) 2.(clá.ri.fi)ca.to.ry $$ || 3.(clá.ri.fi)ca(tò:.ry) ^ 4.cla(rí.fi.ca)(tò:.ry)
15. 1.(clàs.si.fi)(cá:.to.ry) 2.(clás.si.fi)ca.to.ry $$ || 3.(clás.si.fi)ca(tò:.ry) ^ 4.clas(sí.fi.ca)(tò:.ry)
16. 1.com(mén.da.to)ry 2.(còm.men)(dá:.to.ry) || 3.com(mén.da)(tò:.ry)
17. 1.(còm.pen)(sá:.to.ry) 2.(cóm.pen)(sà:.to)ry 3.com(pén.sa.to)ry || 4.com(pén.sa)(tò:.ry)
18. 1.con(cí.li.a)to.ry $ 2.(ø.còn)(cí.li.a)to.ry $ 3.con(cí.li)(à:.to)ry 4.con(cì.li)(á:.to.ry) || 5.con(cí.li.a)(tò:.ry)
19. 1.con(dém.na.to)ry 2.con(dém.na.to)ry @ 3.(còn.dem)(ná:.to.ry) || 4.con(dém.na)(tò:.ry)
20. 1.con(fí:r.ma.to)ry 2.(còn.fir)(má:.to.ry) 3.(cón.fir)(mà:.to)ry || 4.con(fí:r.ma)(tò:.ry)
21. 1.con(fís.ca.to)ry 2.(còn.fis)(cá:.to.ry) 3.(cón.fis)(cà:.to)ry || 4.con(fís.ca)(tò:.ry)
22. 1.con(grà.tu)(lá:.to.ry) 2.(ø.còn)(grà.tu)(lá:.to.ry) 3.con(grá.tu.la)to.ry $ || 4.con(grá.tu.la)(tò:.ry)
23. 1.con(súl.ta.to)ry 2.con(súl.ta.to)ry @ || 3.con(súl.ta)(tò:.ry)
24. 1.(cré.ma.to)ry || 2.(cré.ma)(tò:.ry)
25. 1.de(clá.ra.to)ry || 2.de(clá.ra)(tò:.ry)
26. 1.(dé.di.ca)to.ry $ || 2.(dé.di.ca)(tò:.ry)
27. 1.de(fá.ma.to)ry || 2.de(fá.ma)(tò:.ry)
28. 1.(dè.ni)(grá:.to.ry) 2.(dé.ni)(grà:.to)ry || 3.(dé.ni.gra)(tò:.ry)
29. 1.de(pí.la.to)ry || 2.de(pí.la)(tò:.ry)
30. 1.(dé.pre)(cà:.to)ry 2.(dè.pre)(cá:.to.ry) || 3.(dé.pre.ca)(tò:.ry)
31. 1.de(pré:.ci.a)to.ry $ || 2.de(pré:.ci.a)(tò:.ry)
32. 1.de(pré.da.to)ry 2.(dè.pre)(dá:.to.ry) 3.(dé.pre)(dà:.to)ry || 4.de(pré.da)(tò:.ry)
33. 1.de(ró.ga.to)ry || 2.de(ró:.ga)(tò:.ry)
34. 1.(dí.la.to)ry || 2.(dí.la)(tò:.ry)
35. 1.dis(crí.mi.na)to.ry $ 2.dis(crì.mi)(ná:.to.ry) || 3.dis(crí.mi.na)(tò:.ry)
36. 1.e(lú:.ci)(dà:.to)ry 2.e(lù:.ci)(dá:.to.ry) || 3.e(lú:.ci.da)(tò:.ry)
37. 1.(é.ma)(nà:.to)ry 2.(è.ma)(ná:.to.ry) 3.(é.ma.na)to.ry $ || 4.(é.ma.na)(tò:.ry)
38. 1.ex(clá.ma.to)ry || 2.ex(clá.ma)(tò:.ry)
39. 1.ex(cú:.sa.to)ry 2.(èx.cu)(sá:.to.ry) || 3.ex(cú:.sa)(tò:.ry)

á primary stress
à secondary stress
\+ BrE non-RP
|| AmE pronunciations follow
a:, a(:) long vowel, optionally long vowel
<u>a</u> full vowel in unstressed syllable
@ secondary stress on initial σ possible, (ø.σ̀)
^ non-peripheral extrametrical σ
$ 2 consecutive extrametrical syllables
$$ 3 consecutive extrametrical syllables
ø null vowel
\- syncope

40. 1.ex(há(:).la.to)ry || 2.ex(há:.la)(tò:.ry)
41. 1.(éx.pi.a)to.ry $ 2.(éx.pi)(à:.to)ry 3.(èx.pi)(á:.to.ry) || 4.(éx.pi.a)(tò:.ry)
42. 1.ex(pí:.ra.to)ry 2.ex(pí.ra.to)ry @ || 3.ex(pí:.ra)(tò:.ry)
43. 1.ex(plá.na.to)ry || 2.ex(plá.na)(tò:.ry)
44. 1.ex(pló(:).ra.to)ry || 2.ex(pló:.ra)(tò:.ry)
45. 1.ex(pú:r.ga.to)ry || 2.ex(pú:r.ga)(tò:.ry)
46. 1.ges(tá:.to.ry) 2.(gés.ta.to)ry || 3.(gés.ta)(tò:.ry)
47. 1.hal(lú:.ci.na)to.ry $ 2.hal(lù:.ci)(ná:.to.ry) 3.hal(lú:.ci)(nà:.to)ry || 4.hal(lú:.ci.na)(tò:.ry)
48. 1.(hó:r.ta.to)ry 2.ho:r(tá:.to.ry) || 3.(hó:r.ta)(tò:.ry)
49. 1.(ím.pre)(cà:.to)ry 2.(ìm.pre)(cá:.to.ry) 3.im(pré.ca.to)ry || 4.(ím.pre.ca)(tò:.ry) 5.im(pré.ca)(tò:.ry)
50. 1.(ìn.can)(tá:.to.ry) 2.in(cán.ta.to)ry || 3.in(cán.ta)(tò:.ry)
51. 1.in(crí.mi.na)to.ry $ 2.in(crí.mi)(nà:.to)ry || 3.in(crí.mi.na)(tò:.ry)
52. 1.in(cúl.pa.to)ry 2.(ín.cul)(pà:.to)ry 3.(ìn.cul)(pá:.to.ry) || 4.in(cúl.pa)(tò:.ry)
53. 1.(ín.no)(và:.to)ry 2.(ín.no.va)to.ry $ || 3.(ín.no.va)(tò:.ry)
54. 1.(ìn.ter)(ró.ga.to)ry || 2.(ìn.ter)(ró:.ga)(tò:.ry)
55. 1.in(tì.mi)(dá:.to.ry) 2.in(tí.mi)(dà:.to)ry || 3.in(tí.mi.da)(tò:.ry)
56. 1.(ín.ven.to)ry || 2.(ín.ven)(tò:.ry)
57. 1.(jús.ti.fi)(cà:.to)ry 2.(jùs.ti.fi)(cá:.to.ry) 3.(jús.ti.fi)ca.to.ry $$ || 4.jus(tí.fi.ca)(tò:.ry)
5.(jús.ti.fi)(cà.to.ry)
58. 1.la(bó.ra.to)ry || 2.(lá.bo.ra)(tò:.ry)
59. 1.(làch.ry)(má:.to.ry) 2.(lách.ry)(mà:.to)ry 3.(lách.ry.ma)to.ry $ || 4.(lách.ry.ma)(tò:.ry)
60. 1.(láu:.da.to)ry || 2.(láu:.da)(tò:.ry)
61. 1.(mán.da.to)ry 2.man(dá:.to.ry) || 3.(mán.da)(tò:.ry)
62. 1.(más.ti.ca)to.ry $ 2.(más.ti)(cà:.to)ry 3.(màs.ti)(cá:.to.ry) || 4.(más.ti.ca)(tò:.ry)
63. 1.(mà(:)s.tur)(bá:.to.ry) 2.(má:s.tur)(bà:.to)ry || 3.(más.tur.ba)(tò:.ry)
64. 1.(mí:.gra.to)ry 2.mi:(grá:.to.ry) @ || 3.(mí:.gra)(tò:.ry)
65. 1.ob(jú:r.ga.to)ry 2.(ób.ju(:)r)(gà:.to)ry 3.(òb.jur)(gá:.to.ry) || 4.ob(jú:r.ga)(tò:.ry)
66. 1.ob(lí.ga.to)ry || 2.ob(lí.ga)(tò:.ry) 3.(ób.li.ga)(tò:.ry)
67. 1.ob(sé:r.va)t-.ry 2.ob(sé:r.va)t-.ry @ 3.ob(sé:r.va.to)ry || 4.ob(sé:r.va)(tò:.ry)
68. 1.(ó.ra.to)ry || 2.(ó:.ra)(tò:.ry)
69. 1.(ós.cil.la)to.ry $ 2.(òs.cil)(lá:.to.ry) 3.(ós.cil)(là:.to)ry || 4.(ó:s.cil.la)(tò:.ry)
70. 1.pa:r(tì.ci)(pá:.to.ry) 2.(pà:r.ti.ci)(pá:.to.ry) 3.pa:r(tí.ci.pa)to.ry $ || 4.pa:r(tí.ci.pa)(tò:.ry)
71. 1.pho:(ná:.to.ry) 2.(phó:.na.to)ry || 3.(phó:.na)(tò:.ry)
72. 1.pla(cá:.to.ry) 2.(plá.ca.to)ry || 3.(plá(:).ca)(tò:.ry)
73. 1.(pó:.ta.to)ry || 2.(pó:.ta)(tò:.ry)
74. 1.(pré.ca.to)ry || 2.(pré.ca)(tò:.ry)
75. 1.(pré.fa.to)ry || 2.(pré.fa)(tò:.ry)
76. 1.pre(pá.ra.to)ry || 2.pre(pá.ra)(tò:.ry)
77. 1.pro:(clá.ma.to)ry || 2.pro:(clá.ma)(tò:.ry)
78. 1.pro:(pí.ti.a)to.ry $ 2.pro:(pí.ti)(à:.to)ry 3.pro:(pì.ti)(á:.to.ry) || 4.pro:(pí.ti.a)(tò:.ry)
79. 1.pul(sá:.to.ry) 2.(púl.sa.to)ry || 3.(púl.sa)(tò:.ry)

á	primary stress	@	secondary stress on initial σ possible, (ø.σ̀)
à	secondary stress	^	non-peripheral extrametrical σ
+	BrE non-RP	$	2 consecutive extrametrical syllables
||	AmE pronunciations follow	$$	3 consecutive extrametrical syllables
a:, a(:)	long vowel, optionally long vowel	ø	null vowel
a	full vowel in unstressed syllable	-	syncope

80. 1.(pú:r.ga.to)ry || 2.(pú:r.ga)(tò:.ry)
81. 1.(pù:.ri.fi)(cá:.to.ry) 2.(pú:.ri.fi)(cà:.to)ry 3.(pú:.ri.fi)ca.to.ry $$ || 4.pu(rí.fi.ca)(tò:.ry)
5.(pú.ri.fi)ca(tò:.ry) ^
82. 1.(rè.con)(cí.li.a)to.ry $ 2.(rè.con.ci)li(á:.to.ry) ^ || 3.(rè.con)(cí.li.a)(tò:.ry)
83. 1.re(:)(crí.mi.na)to.ry $ 2.re(crì.mi)(ná:.to.ry) || 3.re(crí.mi.na)(tò:.ry)
84. 1.re(fór.ma.to)ry || 2.re(fór.ma)(tò:.ry)
85. 1.(rè.gu)(lá:.to.ry) 2.(ré.gu)(là:.to)ry 3.(ré.gu.la)to.ry $ || 4.(ré.gu.la)(tò:.ry)
86. 1.re(:)s(pí(:).ra.to)ry 2.(rés.pi.ra)to.ry 3.(rés.pi)(rà:.to)ry 4.(rès.pi)(rá:.to.ry) || 5.(rés.pi.ra)(tò:.ry)
6.res(pí:.ra)(tò:.ry)
87. 1.re(:)(tá.li.a)to.ry $ 2.re(tà.li)(á:.to.ry) || 3.re(tá.li.a)(tò:.ry)
88. 1.re(vé:r.be.ra)to.ry $ 2.re(vé:r.be)(rà:.to)ry || 3.re(vé:r.be.ra)(tò:.ry)
89. 1.ro:(tá:.to.ry) 2.(ró:.ta.to)ry || 3.(ró:.ta)(tò:.ry)
90. 1.(stè:r.nu)(tá:.to.ry) 2.ste:r(nú:.ta.to)ry || 3.ster(nú:.ta)(tò:.ry)
91. 1.(stí.pu.la)to.ry $ 2.(stì.pu)(lá:.to.ry) || 3.(stí.pu.la)(tò:.ry)
92. 1.(sú:.da.to)ry || 2.(sú:.da)(tò:.ry)
93. 1.(sùp.pli)(cá:.to.ry) 2.(súp.pli)(cà:.to)ry 3.(súp.pli.ca)to.ry $ || 4.(súp.pli.ca)(tò:.ry)
94. 1.(ún.du.la)to.ry $ 2.(ùn.du)(lá:.to.ry) || 3.(ún.du.la)(tò:.ry)
95. 1.vi:(brá:.to.ry) 2.(ví:.bra.to)ry || 3.(ví:.bra)(tò:.ry)

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