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A Reanalysis of English Word Stress
Part I

JOHN ROBERT ROSS
Massachusetts Institute of Technology and
The Language Research Foundation

0. Introduction

As suggested by its title, this work will be based on a previous analysis of English stress, namely, that contained in Noam Chomsky and Morris Halle's fundamental and awe-inspiring work, *The Sound Pattern of English* (hereafter SPE. Otherwise unidentified page references are to SPE. All references to examples and rules in chapter 3 of SPE will be cited in square brackets, to distinguish them from the parentheses I will use.). The paper will also be formulated within the framework of generative phonology that is elaborated in SPE. It should therefore be obvious that the present paper presupposes SPE in two respects: first, it will not be possible for one who is not thoroughly familiar with SPE to evaluate the reanalysis I will propose below; and second, my work, while it suggests that considerable restructuring is necessary in the system that is built up in SPE, is a direct descendant

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of SPE. It would not have been possible to write it without the great stimulus provided by SPE or without the many hours of discussion and criticism that Chomsky and Halle have generously given me, and for which I am deeply grateful to them.

The title also suggests the main area of the revisions that I will propose for the phonology of English stress below the word level. The rules that stress constituents larger than words, the Nuclear Stress Rule for phrases (pp. 89–91) and the Compound Rule (pp. 91–94), seem to me to be basically correct, and I will not be concerned below with the stress contours that these rules characterize, except in § 8 where I will argue that these two rules must be somewhat extended. Nor will I be concerned, except briefly, in § 8, with the Stress Adjustment Rule (hereafter SAR), which, in the words of SPE (p. 94), "reserve[s] secondary stress for phrases that contain more than one word," or with the rules that assign secondary stress in words like *Mon^{3}ong^{1}ahela* and *W^{3}innipes^{1}aukee* and that account for the contrast between words like *b^{3}and^{1}anna* and *b^{0}an^{1}ana*. (Cf. SPE, pp. 110–126.) My major concern will be the two rules in SPE that assign primary stress: the Main Stress Rule (cf. pp. 29–43, 69–77, 79–89, 94–110, and 126–162; hereafter MSR) and the Alternating Stress Rule (cf. pp. 77–79; hereafter ASR). Both rules will be reviewed briefly in § 1 below. In § 2, an argument will be given for the addition of a new case to the ASR, so that it will shift primary stress back not only in words having three or more syllables, but also in disyllables. In § 3, evidence will be given that a new case should be added to the MSR. The consequences of the proposed new case, which are profound, are discussed in detail in § 4. In § 5, the ASR will be given a final reformulation. In § 6, I will examine in detail the interrelationship of the Stressed Syllable Rule (cases (c) and (d) of the MSR) and the ASR, concluding that in fact they must be subcases of one rule, the Retraction Rule. These paragraphs will conclude Part I. In an envisioned Part II, in § 7, I will discuss a number of phonological processes not treated in SPE, a discussion that will lead to the formulation of the rules of Destressing, Medial Laxing, Penult Tensing, and Medial *e*-Elision, as well as to a new treatment of the SPE segment /y/ and to some suggestions for a revision of the underlying vowel system of SPE. In § 8, I will argue that some cases of

stress retraction that are treated in SPE as instances of case (c) of the MSR be regarded as instances of a suitably extended version of the Compound Rule instead. In § 9, I will examine several cases of "conspiracies" in English—that is, groups of rules that have the same function, but that have no formal similarities. In §10, I will summarize, listing in their final form, all the redundancy rules and phonological rules that I have proposed in earlier sections. I will investigate the extent to which these rules allow English stress to be predicted. Finally, in §11, I will examine the evidence for the existence of cyclically ordered rules below the word level in English in particular, and the question of the abstractness of the underlying phonological representations that can be justified for English, in general.

1. A Review of the System of Rules in SPE

The MSR is based upon the contrast in stress between such words as those in (1) below.[1]

(1) (a) *^{1}edit* *ab^{1}andon* (b) *^{3}er^{1}ase* *d^{3}en^{1}y*
dev^{1}elop *reconn^{1}oiter* *all^{1}ow* *at^{1}one*

(c) *rel^{1}ent* *av^{1}ert*
mol^{1}est *d^{3}iv^{1}est*

Making use of the notion *weak cluster* (cf. p. 29 for a preliminary, and p. 83 for a final, definition) Chomsky and Halle propose to account for the stress on the verbs in (1) with rule (2) (cf. p. 29):

(2) $V \rightarrow [1 \text{ stress}] / \text{---} C_0(W)]$ case (e)

This rule I will refer to as case (e) of the MSR, for reasons that will become apparent below. By the conventions pertaining to disjunctively ordered rules (cf. pp. 30–36), it will stress the words in (1a) on the penult, since they end in weak clusters—a simple syllabic nucleus followed by no more than a single consonant. Since the words in (1b) and (1c)

[1]The tertiary stress on the first syllables of such words as *^{3}er^{1}ase*, *d^{3}en^{1}y*, and *r^{3}econn^{1}oiter* in (1) is assigned by rules discussed in SPE (cf. pp. 110-126), and need not concern us here. Unless this tertiary stress is of some immediate interest, I will omit it in the citations of forms below.

do not end in weak clusters, rule (2) will assign final stress to them.

Chomsky and Halle noted that many nouns that end in syllables containing a complex nucleus, such as those in (3), have final stress, just like the verbs in (1b).

(3) *attire*
ravine
affair
lagoon

However, for many nouns ending in weak clusters, such as those in (4), stress is on the antepenult or penult, depending on whether the penult is weak or strong, respectively.

(4) (a)	*venison*	(b) *horizon*	(c) *phlogiston*
	integer	*October*	*September*
	syllabus	*Uranus*	*meniscus*
	Connecticut	*pilot*	*Narragansett*
	America	*aroma*	*Alaska*

These forms necessitate the establishment of a new environment in which rule (2), which is referred to in SPE as the Romance Stress Rule (hereafter RSR), can apply. This environment, which is stated in (5), and added formally to rule (2) in (6), is case (b) of the MSR.

(5) $$— \begin{bmatrix} V \\ -tns \end{bmatrix} C_0 \ ]_N \qquad \text{case (b)}$$

(6) $$V \rightarrow [1 \text{ stress}] / — C_0 (W) / — \begin{bmatrix} V \\ -tns \end{bmatrix} C_0 \ ]_N$$

We find that the stress patterns of many adjectives can also be assigned by rule (2), in such cases as those in (7).

(7) (a)	*clandestine*	(b) *obscene*	(c) *adept*
	handsome	*immune*	*robust*
	vulgar	*urbane*	*overt*
	solid	*remote*	*occult*

That is, since the adjectives in (7a) end in weak clusters, they will receive penultimate stress by rule (2), while the adjectives in (7b) and (7c), which end in strong clusters, will receive final stress.

However, if we consider adjectives ending in monosyllabic

suffixes containing a lax vowel, such as those in (8), a stress pattern paralleling that in (4) is observed.

(8) (a)	*personal*	(b) *colloidal*	(c) *placental*
	libelous	*desirous*	*portentous*
	vigilant	*defiant*	*observant*

That is, if the affixes *-al*, *-ous*, and *-ant* were to be disregarded in the adjectives in (8) and the RSR were to apply to the remainder, the correct stress patterns would result.[2] Thus, the MSR must be amended in such a way as to take this generalization into account. The revised version is stated in (9).

(9) $$V \rightarrow [1 \text{ stress}] / — C_0(W) / — +C_0 \begin{bmatrix} -cns \\ -tns \end{bmatrix} C_0 \ ]_{NA}$$

case (a)

$$— \begin{bmatrix} V \\ -tns \end{bmatrix} C_0 \ ]_N$$

case (b)

$$— \ ]$$ case (e)

Rule (9), if applied to such underlying representations as those roughly indicated in (10) (I have disregarded the fact that the MSR would have applied on an earlier cycle to the verbs *advise* and *promise*),

(10) (a) inhibit + ɔ̄r + y (b) advīz + ɔ̄r + y
(c) contradict + ɔ̄r + y

would yield forms whose primary stress was incorrectly located on the penultimate syllable. Since the word *inhibitory* manifests tertiary stress on its penult, however, Chomsky and Halle suggest that primary stress be placed on this syllable (by case (a), where the sequence +y is the affix that is disregarded) and that primary stress be reassigned to the

[2]The final vowel of the noun *placenta* must be deleted, by rules that have been inadequately studied, in forming the adjective *placental* (cf. fn. 38 below). The fact that the nouns *colloid* and *portent* do not have primary stress on the final syllable, as would be expected from what has been said so far, will be explained below in connection with a revision of the ASR that I will propose.

second syllable of the word, with automatic stress weakening of the stress on the penult, by a convention that is independently motivated. This stress-retraction rule reassigns stress in accordance with the RSR: in (10a), where the syllable preceding the original primary stress ends in a weak cluster, the stress is placed on the syllable that precedes this cluster. In (10b) and (10c), however, since the syllables that originally bore primary stress are preceded by strong clusters, the RSR will place primary stress on these clusters, deriving the intermediate forms in (11).

(11) **advísory* **contradictory*

These forms subsequently undergo a rule that states (essentially) that medial syllables that immediately follow a syllable bearing primary stress cannot bear stress (this rule is discussed on pp. 119–125). Since these vowels are stressless, they will be subject to the rule of Vowel Reduction, and the correct forms *advisory* and *contradictory* will be derived.

Thus, we see that the MSR must again be revised, to account for such forms as those in (10). The RSR must be able to apply to retract primary stress in certain cases, when a previous rule has placed stress on the final syllable, that is, in an environment that, following SPE, I will schematically symbolize as in (12), which represents cases (c) and (d) of the MSR.

(12) —— Σ' cases (c) and (d)

There are a number of complications pertaining to contrasts like those in (13), which SPE extends case (c) to handle (cf. pp. 100–110).

(13) *monograph* – *monosyllable* – *monogenesis*
permit$_V$ – *permit*$_N$ – *hermit*$_N$

These cases of the MSR are highly complex, and I will postpone further discussion of them until I take up the matter of the relationship between the stress retraction that is effected by these two cases and that effected by the ASR (cf. § 6 below).

To sum up, then, the MSR of SPE takes the type of stress contrast exemplified in (1) and (7) to be paradigmatic. Rule (2), the RSR, which accounts for these cases in isolation (case (e)), is then extended to apply before monosyllabic affixes whose final vowel is lax (case (a)), before the last syllable of nouns whose final vowel is lax (case (b)), and before a final-stressed syllable (cases (c) and (d)). The final, albeit unabbreviated, form of the MSR that is arrived at in SPE is given in (14):

(14) $V \rightarrow [1\ \text{stress}] / \text{——}\ C_0(W) / \text{——}\ C_0\begin{bmatrix}-\text{cns}\\-\text{tns}\end{bmatrix} C_0\ ]_{NA}$ case (a)

$\text{——}\ \begin{bmatrix}V\\-\text{tns}\end{bmatrix} C_0\ ]_N$ case (b)

—— Σ' cases (c) and (d)

——] case (e)

Rule (14) is not adequate, however, to account for all observed instances of primary stress within words. Such words as those in (15) would fall within the scope of case (e) of the MSR and would, in the absence of other rules, end up with the stress incorrectly located on the final syllable.

(15)

(a)	*hurricane*	*galvanize*	*asinine*
	dynamite	*gallivant*	*manifest*
	diocese	*magnify*	*erudite*
	Satterthwaite	*anticipate*	*moribund*
	artichoke	*execute*	*bellicose*
(b)	*anecdote*	*exacerbate*	*saturnine*
	magistrate	*devastate*	*infantile*

To account for the stress pattern of these words, Chomsky and Halle proposed a second stress-retraction rule, the ASR, which I have stated approximately in (16). (Note that rule (16) must apply to all major categories, for all are represented in (15).)

(16) $V \rightarrow [1\ \text{stress}] / \text{——}\ C_0\ (=)\ C_0VC_0\acute{V}C_0\ \#$

From the examples in (15b), it is clear that the stress is not retracted in accordance with the RSR, for if this were the case the words in (15b) would have penultimate, instead of the correct antepenultimate, stress. Thus, two stress-retraction rules are necessary—cases (c) and (d) of the MSR, which retract primary stress in accordance with the RSR, and the ASR, which retracts stress two syllables, regardless of

whether the immediately preceding syllable contains a strong or a weak cluster.

2. An Extension of the Alternating Stress Rule

The MSR and, following it, the ASR are the two major rules for the placement of primary stress within English words. Let us now consider a large class of words that cannot be accounted for by the rules given in SPE, without postulating highly counterintuitive underlying forms.

(17)			
	Árgyle	*archive*	*mangrove*
	carbine	*carboy*	*Moscow*
	quinine	*gargoyle*	*Osage*
	mohair	*gentile*	*protein*
	satire	*gangrene*	*tirade*

The only available rule in SPE that could produce the 1–3 stress patterns on the words in (17) is rule [158] of chapter III, which I reproduce here for convenience.

$$[158] \quad \begin{bmatrix} V \\ +\text{tns} \end{bmatrix} \rightarrow [1 \text{ stress}] / + \text{---} C_0 \#$$

This rule, which applies before the MSR to assign primary stress to the final syllable of *vac+ate*, will provide the environment necessary for the Stressed Syllable Rule of the MSR to retract the stress to the first syllable. Chomsky and Halle thus account for the stress contrast between *vácate* and *create* by postulating that the former, but not the latter, verb is analyzed into stem and suffix. This account is rendered plausible by the existence of such related forms as *vacant*, but the absence of corresponding forms related to *create*. However, in order to explain the stress contrast between the words in (17) and those in (18),[3]

(18)			
	boutique	*pastiche*	*esteem*
	canteen	*trapeze*	*domain*
	pontoon	*cayuse*	*cocaine*
	crusade	*caffeine*	*champagne*
	shampoo	*bamboo*	*lampoon*

Chomsky and Halle must postulate that the words in (17)

[3]I am grateful to Morris Halle and Jay Keyser for furnishing me with a large number of examples like those in (18).

contain morpheme boundaries, while those in (18) do not. It is important to note that there is no independent justification for such a segmentation. Inserting morpheme boundaries into words like those in (17) is therefore exactly equivalent to marking these words with a rule feature to indicate that they will undergo rule [158].[4] But if a solution making use of ad hoc morpheme boundaries is only notationally different from a solution making use of rule features, we might ask whether it is necessary to have rule [158] in the grammar at all, or whether it would not be equally possible to mark words like those in (17) and (18) as being exceptions to some independently motivated rule.

In fact, this latter possibility seems to be feasible. Joseph Emonds (personal communication) and Paul Kiparsky (class lectures at MIT in the spring of 1968) have pointed out that if the ASR is extended to retract stress in disyllables as well as in trisyllables, the stress patterns of the words in (17) and (18) can be accounted for. The modified ASR appears in (19).

$$(19) \quad V \rightarrow [1 \text{ stress}] / \text{---} C_0 (=) C_0 (VC_0) \overset{1}{V} C_0 \#$$

The conventions on disjunctive ordering of rules would stipulate that the stress be moved back two syllables in trisyllables and one syllable in disyllables. If rule [158] is dispensed with, all the words in (17) and (18) would first receive primary stress on their final syllables by case (e) of the MSR. The words in (17) would be marked in the lexicon with the feature [+ASR], and those in (18) with the feature [-ASR]. As far as I can tell, it is impossible to predict whether stress retraction will take place in disyllabic nouns: words like (17) are as numerous as words like (18). The situation is slightly more complex for verbs and adjectives, which I will discuss in §6.3 below.

In support of the proposed extension of the ASR to disyllables, note that the ASR has many exceptions for trisyllabic words (which is noted in SPE, pp. 157–158). Thus, not only words like those in (18) would have to be marked [-ASR], but also the trisyllables in (20).[5]

[4]The notion of rule feature is discussed on pp. 172–176 and pp. 373–380.

[5]Note also that many speakers have douplets for such words as *lemonade*, *gasoline*, *magazine*, etc., which can be either initially or finally stressed.

(20)

buccaneer	*acquiesce*	*arabesque*
brigadoon	*barricade*	*apropos*
Listerine	*guarantee*	*debonair*
Illinois	*ascertain*	*Japanese*

While the stress of words like *Illinois* and *Listerine* cannot be predicted apparently by any general rules (compare such words as *Iroquois*, *corduroy*, *Ovaltine*, *amphetamine*), there are many suffixes, such as *-esque*, *-ese*, *-esce*, which never, or almost never, have primary stress moved back off them by the ASR. The same is true of certain phonological sequences that end monomorphemic stems. Thus, in most dialects, all trisyllables that end in graphic *-oon* have final stress. Some examples are provided in (21).

(21)

macaroon	*granfaloon*
brigadoon	
pantaloon	
Cameroon	
Saskatoon	

This fact can be used to give even stronger support for the proposed extension of the ASR to disyllables. As noted by Emonds and by Kiparsky, whenever there are regularities governing words to which the trisyllabic ASR does not apply, disyllables will also have final stress. For example, paralleling trisyllabic words in *-oon,* which all have final stress, we find that all disyllabic words in *-oon* also have final stress. Some examples are given in (22).

(22)

pontoon	*raccoon*	*poltroon*
lampoon	*lagoon*	*buffoon*
harpoon	*saloon*	*maroon*
monsoon	*dragoon*	*balloon*
cocoon	*doubloon*	*spittoon*

Similarly, just as trisyllabic adjectives in *-ese* retain final stress, as in the examples in (23a), so the disyllabic adjectives in *-ese* in (23b) are also finally stressed.

(23)

(a)	(b)
Japanese	*Chinese*
Portuguese	*Trukese*
Javanese	*Siamese*
journalese	*Maltese*
Tyrolese	*Burmese*

The fact that stress retraction in disyllables fails to occur under precisely the same conditions under which it fails for trisyllables is a generalization that should find formal expression in a descriptively adequate grammar of English. This is possible if the ASR is extended as I have suggested in (19) and if a lexical redundancy rule like the one stated informally in (24) is contained in the grammar.

(24) All words ending in the morpheme /+ēz/ or the phonological sequence /ōn/ are [-ASR].

Interestingly, cases can also be found where the ASR *must* apply. All words that end in a lax vowel followed by a voiced stop must retract the stress from their final syllable.[6] Thus, the trisyllabic words in (25a) have undergone stress retraction, as have the disyllabic words in (25b).[7]

(25)

(a)	*Belzebub*	*Ichabod*	*pollywog*
	shishkabob	*Galahad*	*scalawag*
		katydid	*chugalug*
(b)	*nabob*	*Nimrod*	*humbug*
	Cantab	*gonad*	*shindig*
	Ahab	*monad*	*muskeg*

This fact also supports the revision of the ASR given in (19) and necessitates adding to the grammar a redundancy rule like that informally expressed in (26).

(26) All words ending in / $\begin{bmatrix} \text{V} \\ \text{-tns} \end{bmatrix} \begin{bmatrix} \text{+obs} \\ \text{-cnt} \\ \text{+voi} \end{bmatrix}$ / are [+ASR].

Paul Kiparsky has observed parallel facts about the phonological sequences /ɔf/ and /ĭn/ (class lectures at MIT). Thus, the trisyllabic nouns in /ɔf/ in (27a) must retract stress, as must the disyllables in (27b).

(27)

(a)	(b)
Romanoff	*Lukoff*
Malenkov	*Lakoff*
Molotov	*Smirnoff*
Jackendoff	*Karloff*

[6]How this final weak cluster receives primary stress will be discussed in § 3 below.

[7]I know of only four words that do not conform to the pattern of (25): *Madrid*, *kabob*, *nawab*, and *agog*.

Similarly, the stress has been retracted from the final syllable of the trisyllables in graphic *-ine* in (28a) as well as in the disyllables in (28b). Actually, the redundancy noted by Kiparsky about *-ine* can be generalized: any word ending in /ĭC$_0$/, except for disyllabic verbs, must retract stress. Thus, the trisyllables in (28c) exhibit stress retraction, as do the disyllables in (28d). The words in (28e) are the only true exceptions to this broader generalization that I have been able to find.

(28)

(a)	*Pálestine*	*philístine*	*ánodyne*	*cóncubine*
	Túrrentine	*iódine*	*sáturnine*	*pórcupine*
	túrpentine	*Válentine*	*cólumbine*	*ásinine*
(b)	*quínine*	*súpine*	*féline*	
	cárbine	*túrbine*	*cánine*	
	Álpine	*bóvine*	*vúlpine*	
(c)	*sámurai*	*Whítsuntide*	*máritime*	*érudite*
	álkali	*infántile*	*páradise*	*expédite*
	álibi	*mércantile*	*mérchandise*	*récondite*
	Gémini	*cámomile*	*énterprise*	*sátellite*
	díatribe	*crócodile*	*ímprovise*	*dýnamite*
	sácrifice	*réconcile*	*súpervise*	*áppetite*
	hómicide	*dómicile*	*párasite*	*légalize*
	bármecide	*júvenile*	*ánthracite*	*líonize*
	cyánide	*pántomime*	*plébiscite*	
(d)	*rábbi*	*cárbide*	*núbile*	*sátire*
	brómide	*óxide*	*prófile*	*ésquire*
	árchive	*túrnpike*	*sénile*	*excíse*$_N$
	vámpire	*rámpike*	*géntile*	*térmite*
	úmpire	*álsike*	*téxtile*	*Sémite*
	émpire	*fébrile*	*éxile*	*Hittite*
	Árgyle	*Cárlisle*	*franchise*	*báptize*
(e)	*Julý*	*surprise*$_N$	*divide*$_N$	*divíne*
	Bahái	*devíce*	*assize*	*sublíme*
	attíre	*advíce*	*polite*	*entíre*
	disguise$_N$	*delight*$_N$	*contrite*	

The fact that there is no stress retraction in such verbs as *relý*, *defý*, *applý*, *advíse*, *recline*, and *excíte* will be discussed in §6.2 below, in connection with rule (95).

Thus, for trisyllables as well as for disyllables, stress retraction is obligatory under the same conditions and impossible under the same conditions. This fact can be captured if the ASR is extended to apply to both types of words, as in (19). This extension allows us to dispense with rule [158] entirely[8] and makes the stress differences between (17) and (18) a purely unpredictable lexical fact, except where there exist such lexical redundancy rules as I have just discussed. From now on, therefore, when I refer to the ASR, I will mean the extended version of (19).

3. A New Case for the Main Stress Rule

3.1. Let us now consider such words as the nouns in (29).

(29)	*Ámazon*	*ócelot*	*kátydid*	*Ichabód*
	díadem	*Beélzebub*	*bólshevik*	*Mamároneck*
	dáffodil	*tómahawk*	*Márrakech*	*álbatross*

I assume that these nouns have no internal structure, so that their stress cannot be assigned by case (a) of the MSR. Since

[8]To the extent that the generalization is valid—that it is only to the disyllabic verbs in *ate* (for which a morphemic analysis can be independently justified, e.g., *vacate*, *locate*, *rotate*, *migrate*, *gyrate*) that stress retraction applies—a lexical redundancy rule can be formulated to express this fact as a condition upon the applicability of the extended ASR. It is my impression, however, that except for verbs in *-ate*, the generalizations that can be found are not worth setting up a rule like [158] for. For instance, many, though not all, of the disyllabic adjectives in *-ose* retain final stress, despite the fact that they are bimorphemic. Compare *vérbose*, *jócose* (cf. *jocular*), *búlbose*, *mórbose* (cf. *morbid*), etc., which retain final stress, with *spínose*, *fílose* (cf. *filament*), etc., in which stress retraction has occurred. The retraction, therefore, does not seem to coincide with analyzability. Also, it would seem that such words as *marine*, *sáltine*, *cáffeine* (perhaps), *éxtreme*, *téchnique*, *úrbane*, *mótif*, etc., should all have morphemic analyses, and yet stress is not retracted, as it would be if [158] were in the grammar. Furthermore, even in the class of words in *-ate*, there are some exceptions: *írate* (cf. *ire*), *órnate* (cf. *adorn*, *ornament*), and *sédate* (cf. *sedentary*). It seems that stress retraction is essentially random, and that whether or not a form is morphemically complex has few consequences for predicting its stress, so I will not pursue the matter further here.

all end in syllables containing a lax vowel, and since all have weak clusters in their penults, case (b) will assign primary stress to the antepenult, producing such unacceptable intermediate forms as (30a), which will result in the phonetic sequence shown in (30b). (The symbol "V̆" designates the lax vowel archiphoneme, and the symbol "V" any vowel. Unless specifically marked long with a macron, e.g., ǣ, ū, etc., particular vowels should be understood to be lax.)

(30) (a) $\overset{1}{\text{æ}}\text{mV̆z}\text{ɔ}\text{n}$ (b) *[$\overset{1}{\text{æ}}$məz$\underset{\cdot}{\text{n}}$]

The final syllable of the words in (29) must somehow receive stress, so that the rule of Vowel Reduction will not convert the final vowels to [ə].

Observe first that the stress difference between words like *Á*^{1}*mazó*^{3}*n* and *Nápo*^{1}*léo*^{0}*n* cannot reside in some difference in the feature composition of the final vowel: the underlying form of the former must be /æmV̆zɔn/, and the underlying form of the latter must be /nV̆pɔliɔn/, because of the related adjective *Napoléo*^{1}*nic*, where the underlying quality of the final vowel appears under stress.

The stress difference must be due, therefore, to a difference in the rules applying to the parallel underlying forms. Two possible analyses suggest themselves. First, one might postulate the existence of a lexically governed rule like (31), which would place secondary stress on the final syllable of certain idiosyncratically marked lexical items.

(31) $\text{V} \rightarrow [2\ \text{stress}] / \overset{1}{\text{V}}\text{C}_0\text{VC}_0 \text{—} \text{C}_0\ \#$

The Stress Adjustment Rule would then lower the [2 stress] to the phonetically observed [3 stress]. *Amazon* and the other words in (29) would be marked to undergo (31), while *Napoleon* and the words in (4) would not.

A second possible analysis would be to postulate a new case of the MSR that placed final stress on certain nouns. The ASR, following this new case, could then be applied to move the stress back from the final syllable, with automatic lowering of the final stress. Thus, the derivation of the 1–3 stress contour of *Á*^{1}*mazó*^{3}*n* would exactly parallel that of the 1–3 stress contour of *hú*^{1}*rricá*^{3}*ne* and of other words like those in (15). Also, since the ASR must be extended so that it moves the stress back in disyllables as well as in trisyllables, as I argued in §2 above, the derivation of the 1–3 stress contour of words like those in (32) and (25b)

(32)

pe^{1}*o*^{3}*n*	*a*^{1}*to*^{3}*ll*	*O*^{1}*shko*^{3}*sh*	*Igo*^{1}*r*
cha^{1}*o*^{3}*s*	*A*^{1}*ztec*	*fu*^{1}*rlo*^{3}*ng*	*Oma*^{1}*r*
Moha^{1}*wk*	*bu*^{1}*rla*^{3}*p*	*la*^{13}*mb*	*mayhe*^{3}*m*

would be derived by first assigning final stress by this new case of the MSR, which I have stated in (33),

(33) $\text{V} \rightarrow [1\ \text{stress}] / \text{—} \text{C}_0\ ]_{\text{N}}$ case (f)

and by then applying the disyllabic case of the ASR. Thus, *Á*^{1}*mazó*^{3}*n* would parallel *hú*^{1}*rricá*^{3}*ne*, and *pe*^{1}*o*^{3}*n* would parallel *Á*^{1}*rgy*^{3}*le*. Of course, it would be necessary to mark *Amazon* and *Napoleon* differently with respect to Rule (31), as well as to mark whether a noun is to undergo case (b) of the MSR (like *Napoleon*), or (33), case (f) (like *Amazon*).[9]

[9]One further, rather ingenious, way to account for the stress of *Á*^{1}*mazó*^{3}*n* might suggest itself: provide this word and the others in (29) with geminate final consonants and a final *e* in their underlying representations. The derivations would then proceed as follows:

Underlying form:	/æmV̆zɔnne/	MSR, case (b)
	æmV̆z^{1}ɔne	Cluster Simplification
	æmV̆z^{1}ɔn	*e*-Elision
	Á^{1}mV̆z^{2}ɔn	ASR
	[*Á*^{1}məz*á*^{3}n]	Other Rules.

Such derivations would require the two rules of Cluster Simplification and *e*-Elision to be placed before the ASR in the rule ordering, but this ordering would not cause any problems, as far as I know.

There is only one argument that I know of against such an analysis, and it is rather weak. In order for the final vowel of such words as *á*^{1}*zó*^{3}*th* and *Kú*^{1}*rá*^{3}*th* to have received final stress by case (b), underlying representations like /æzɔθθe/ and /kuræθθe/ would have to be postulated. But it seems that elsewhere in English, a general restriction exists that prohibits the sequence /θθ/. For example, although we can infer the existence of underlying /tt/, /ss/, /ll/, /dd/, and even /zz/ clusters from the penultimate primary stress on such trisyllabic nouns as *spaghétti*, *Odéssa*, *vanílla*, *Alá*^{1}*ddin*, *muézzin*, there are, to the best of my knowledge, no forms like **spaghéthi*, **odétha*, **vanítha*, **alá*^{1}*thin*, **muéthin*, etc., which would constitute one justification for postulating an underlying /θθ/ sequence. (The words *Hiawatha* and *Abernathy*, which must receive penultimate stress by case (b), can be derived from forms containing a tense /ǣ/, which will regularly be shortened in this position

3.2. There are two strong arguments I know of for preferring the second analysis to the first, that is, for assuming that (33) is a rule of English, but that (31) is not. Note, first of all, that there is a large class of nouns with final stress, but with a lax vowel in their final syllable. Some examples are given in (34).

(34)

Berlín	*pecán*	*cadét*	*sarong*
Madrid	*corrál*	*cornét*	*shebáng*
Suéz	*shellác*	*batón*	*Pekíng*
Quebéc	*abýss*	*chiffón*	*meríngue*
Brazíl	*Chinóok*	*catárrh*	*gestált*
Tibét	*gazélle*	*guitár*	*foulárd*
Ceylón	*crevásse*	*cigár*	*Lucérne*

Such forms must be marked so that case (b) will not apply nor, except for the last column in (34), case (e), for if either of these cases applied, the nouns in (34) would incorrectly receive initial stress. Thus, some rule like (33) must be postulated for these forms.

The second argument for case (f) concerns such words as *Hóttentót*. Since this word has a lax vowel in its final syllable, but a strong cluster in its penult, case (b) would incorrectly produce **Hotténtót*. While the first-proposed analysis, which contains rule (31), could not avoid this incorrect result, the second analysis could. If *Hottentot* were to receive final stress by case (f), the ASR, which retracts stress regardless of the phonological composition of the penult, would correctly assign primary stress to the first syllable, the stress on the

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[note the impossibility of *[hāyəwēyθə], *[æbərnēyθiy]] after the MSR has applied.)

Another indication that /θθ/ sequences should be excluded by a morpheme structure rule is that the phonetic sequences [ʌθ] and [ʌð] are almost unknown in English (the only exceptions I know of are *Rútherford* [in one pronunciation], and *southern*). Since underlying sequences of the form /. . . uθV . . ./ will all be converted to [. . . yūwθV . . .] or [. . . yūwðV . . .] by the rules of SPE (cf. such words as *ēūthanasia, Lūtheran,* etc.), we could explain the absence of phonetic [ʌθ] and [ʌð] by excluding the sequence /θθ/ from underlying representations.

If these arguments are correct, the tertiary stress on the final syllables of *ázóth* and *Kúráth* cannot be due to an underlying final sequence /θθe/. Thus, another explanation for its stress must be sought. The fact that the final vowel of *Óregón* must be tensed in *Óregōnian* (cf. the discussion of this form in §3.3 below) provides further evidence against assuming an underlying /nne/ for this form.

final syllable being automatically weakened. The derivation would proceed as follows.

(35) Underlying form: [hɔtV̆ntɔt]$_N$
[-case (b)]
[-case (e)]

MSR case (f)		1
ASR	1	2
SAR	1	3
Other rules	[hā̤tn̤tā̤t]	

There is a fairly large class of words like *Hóttentót*—trisyllabic nouns with a 1–3 stress contour—whose final vowels are lax and whose penults contain strong clusters. I have given a selection of these in (36).

(36)

Álgernón	*Sámarkánd*
cúmmerbúnd	*háversáck*
ámpersánd	*Bróbdingnág*
Máckintósh	*Árbuthnót*
Cávendísh	*ábelmósk*
Vánderbílt	*gúbbertúsh*
bálderdásh	*gálempúng*
pálimpsést	*bátterfáng*
pároxýsm	*kízilbásh*
Háckensáck	*búrkundáz*[10]

[10]At this point, one might object that many of the words in the right column of (36) are so infrequent as to impeach any argument based on them. I do not find this objection valid. It is a perfectly valid research strategy to submit nonsense forms to native speakers and to use their phonetic intuitions about such forms as an indication of what phonological processes operate in their language. Indeed, it is precisely this type of intuition that morpheme structure rules (or conditions) are designed to capture. I take it that the forms in the right column are sufficiently rare as to effectively constitute nonsense forms for most speakers. However, these forms will be given 1–3 stress contours by English speakers just as readily as the more familiar forms in the left column, a phenomenon I take to be as significant as the fact that English speakers can distinguish between possible nonsense forms like [blik] and impossible ones like *[bnik]. Thus, it seems irrelevant that some of the words I cite as examples are more uncommon than others, unless it can be shown that the phonological processes I infer on the basis of these examples are in conflict with those which can be inferred from more everyday forms. To the best of my knowledge, this conflict does not exist in the case here, or elsewhere in the paper.

On the basis of the above words and of nouns with final stress on lax vowels, like those in (34), I conclude that Rule (33), case (f), must be added to the MSR. Note that any noun that is not stressed by case (b) must receive final stress by case (f). Thus, if a noun is marked [-case (b)], as the nouns in (34) must be, we must also mark it [-case (e)], so that case (e) cannot assign penultimate stress. But instead of marking all [-case (b)] forms [-case (e)] in addition, I will restrict case (e) in (37), the revised version of the MSR, to verbs and adjectives. Nouns will only be stressed by case (b) or case (f).

(37)

$$V \rightarrow [1\ \text{stress}] \Big/ \left\langle \begin{array}{ll} \text{—}\ C_0(W) \Big/ \left\langle \begin{array}{ll} \text{—}\ +C_0 \begin{bmatrix} -\text{cns} \\ -\text{tns} \end{bmatrix} C_0\ ]_{NA} & \text{(a)} \\ \text{—}\ \begin{bmatrix} V \\ -\text{tns} \end{bmatrix} C_0\ ]_N & \text{(b)} \\ \text{—}\ \Sigma' & \text{(c),(d)} \\ \text{—}\ ]_{VA} & \text{(e)} \end{array} \right\rangle & \\ \text{—}\ C_0\ ]_N & \text{(f)} \end{array} \right\rangle$$

3.3. The question that now arises is the following: given that both case (b) and case (f) can be used to stress a noun whose final syllable contains a lax vowel, is there any general way of predicting, from the phonological shape of a noun, which case will apply? Above, I showed that, while *Napoleon* must be stressed by case (b), *Amazon* must be stressed by case (f). To be sure, these words must end in the underlying sequence /ɔn/, so that the choice of which case to apply cannot depend on the final syllable alone. One might believe that one of the many other properties that differentiate these two words, or the words in (4) from those in (29), might be criterional. The following example, however, should convince anyone that this choice is not always predictable, for it is a perfect minimal pair.

Consider the word *Oregon*. In my dialect, it has a 1–3 stress contour and would therefore have to be stressed by case (f). There are dialects, however, in which it is produced with a 1–0 stress contour—[$\overset{1}{\text{ɔ}}\text{rə}\overset{0}{\text{gn}}$] phonetically—and thus it must have been stressed by case (b) in these dialects. However, it is not possible that there is any

phonetic distinction in the underlying forms postulated for this word in the two dialects, for they both have the adjective *Oregonian*, which indicates that the underlying representation in each dialect must be /ɔrV̆gɔn/. Thus, here is a case where stress must be assumed to be unpredictable and distinctive.

However, when we ask where else stress must be lexically marked, we find that the final consonant cluster of a noun plays a decisive role in determining stress. In general, any noun ending in more than one consonant must be stressed by case (f). Examples of this regularity can be seen in the words in (38), all of which have 1–3 stress contours.

(38)

pàrallăx	*kĭòsk*	*dĭthyrămb*	*trănsĕpt*
ănthrăx	*ărimăsp*	*iămb*	*săraband*
ăphelŏps	*bŏomerăng*	*Hĕffalŭmp*	*ĕland*
Cyclŏps	*mŭstăng*	*mŭgwŭmp*	*cătapŭlt*
cătaclysm	*Kennebunk*	*cătaract*	*cobălt*
orgăsm	*Podunk*	*insect*	*Ozark*
ăsterisk	*ăvalanche*	*nympholept*[11]	

As far as I know, the only final clusters that do not require final stress in nouns are those given in (39):[12]

(39) *nt*, *st*, *ts*, *ns*, *rt*, *rd*, *rn*

For nouns ending in the above clusters, stress cannot be predicted. Whether such a noun will be stressed by case (b) or by case (f) must be lexically indicated. In (40a), I have cited nouns that must receive final stress, and in (40b) and

[11]It is immaterial that this word and several others in (38) contain more than one morpheme. All nouns that end in a consonant cluster (with the exceptions to be discussed immediately below) must receive final stress, no matter how many morphemes they contain. Thus, any analysis of *nympholept* is beside the point for the purposes of assigning stress by the MSR.

[12]There are a number of apparent exceptions to this generalization, such as *lŏzenge*, *Lĕnox*, *mŏnarch*, *mŏllusk*, etc., which do not appear to have been stressed by case (f). I will argue in § 3.4 below, however, that they have in fact been finally stressed, that stress has been retracted by the ASR, and that a *Destressing Rule* has subsequently removed the tertiary stress on the final syllable. There are several real exceptions to the generalization—*Egypt*, for instance.

The cluster /nd/ raises special problems, which I will discuss in § 7.1.

(40c) I have cited parallel forms that are assigned antepenultimate or penultimate stress by case (b).

(40)

(a)	(b)	(c)
sycophant	*elephant*	*opponent*[13]
corybant	*cormorant*	*lieutenant*
lophodont	*covenant*	*giant*
event	*element*	*moment*
affront	*document*	*serpent*
pederast	*Everest*	
Pentecost	*catalyst*[14]	
palimpsest		
bombast		
Kibbutz	*Horowitz*	*Massachusetts*
		Manischevitz
		Moritz[15]
romance	*inheritance*	*resistance*
davenport		*comfort*
Mozart		*culvert*
Bogart		*expert*
retort		*Gilbert*
Abelard		*orchard*
Bogarde		*coward*
foulard		*bastard*
		Edward (cf. *Edwardian*)

[13]It is irrelevant here that this word is susceptible of analysis into stem and affix, so that it could also be stressed by case (a). In § 4.1 below, I will attempt to show that when case (b) is reformulated correctly, it is possible to collapse it with case (a), for it is apparently not the case that words with lax affixes are stressed differently than words without affixes.

[14]Most words in /st/ are stressed by case (f). The only two words that I have been able to find in which stress is on the antepenult are given in (40b), and I know of no trisyllabic words in /st/ that have penultimate stress. Possibly, therefore, the two words in (40b) should be regarded as exceptions, although they can be accounted for with exceedingly minor modifications in the otherwise necessary apparatus.

[15]There are almost no nonplural English words that end in /ts/, except for names in *-itz*. Perhaps the few remaining words should merely be treated as exceptions to the generalization that words ending in final consonant clusters other than /nt/ are stressed by case (f).

unicorn	*lantern*
acorn	*lectern*
	cistern

The marginality of contrasts for words ending in the last five clusters cannot be overemphasized. The paucity of longer words ending in these clusters makes it impossible to ascertain whether there is a genuine contrast here between cases (b) and (f). It is only when reasonably large numbers of contrasts of the type exhibited in (4), which constituted the original motivation for case (b), can be found, that one can be sure that a given final consonant cluster can be disregarded by case (b). What evidence I was able to find suggests that probably the only consonant cluster meeting this condition is /nt/. However, although there are few words having three or more syllables and ending in one of the clusters /rt/, /rd/, and /rn/, there are a fair number of stress contrasts like *Bogart–Gilbert*, *acorn–lantern*; I know of no better way of handling them than by postulating that the first member of each pair is stressed by case (f) and the second by case (b). I will therefore reformulate the MSR below in such a way that case (b) can apply to nouns ending in all six of the clusters given in (39), but this decision is obviously provisional.

The above considerations suggest that the original formulation of the environment for case (b) given in (5) is too strong. The words in (38) show that, in general, any noun ending in more than one consonant will receive final stress. The exceptions to this generalization are the six clusters of (39). Thus, C_0 in (5) should be restricted so that it can designate, except for these six clusters, at most one consonant. Thus (5) must be replaced by (41):

(41)

$$— \begin{bmatrix} V \\ -\text{tns} \end{bmatrix} \left\{ \begin{array}{l} C_0^1 \\ \begin{Bmatrix} n \\ r \\ s \end{Bmatrix} t \\ r \begin{Bmatrix} d \\ n \end{Bmatrix} \\ \begin{Bmatrix} t \\ n \end{Bmatrix} s \end{array} \right\}]_N$$

However, (41) is not restrictive enough yet, for it turns out that not all final consonants can be disregarded by case (b)—only dentals and sonorants can. That is, if a word ends in a nondental obstruent—one of the sounds {p, b, f, v, š, ž, č, k, g}[16]—it must be stressed finally by the MSR, which can be seen from the examples in (42) and (43). In (42a), (42b), and (42c), I give examples of nouns ending in sonorants or dentals that receive final stress (by case (f)), penultimate stress (by case (bii)), and antepenultimate stress (by case (bi)), respectively.

(42)

(a)	(b)	(c)
Ábraham	*amálgam*	*módicum*
diadém	*decórum*	*márjoram*
cárdamom	*cárborundum*	*ópium*
máyhem	*bálsam*	*alúminum*
Siám	*jétsam*	*stratégem*
wígwam	*hárem*	*idíom*
caraván	*Poseídon*	*álien*
márathon	*Waúkegan*	*Saracen*
páragon	*Wiscónsin*	*cínnamon*
sámpan	*Byrón*	*dénizen*
ikón	*sérmon*	*pémmican*
Verdún	*Éden*	*gárrison*
samóvar	*Octóber*	*ínteger*
métaphor	*attáinder*	*cáliper*
méteor	*seméster*	*Óliver*
Igór	*cípher*	*vínegar*
Ágar	*mánor*	*báchelor*
guitár	*sphíncter*	*idólater*
álcohol	*utensil*	*cápitol*
párallel[17]	*enámel*	*ársenal*
dáffodil	*appárel*	*códicil*
gazélle	*bróthel*	*fúneral*

[16]Words ending in [ǰ] will be discussed separately below.

[17]The question of whether this word is basically a noun or is deadjectival as a noun is of no importance here. Note that *parallel* has a 1–3 stress whether it is an adjective or a noun. Below, I will show that case (f) must be extended to apply to all major categories, so the fact that *parallel* has the same stress no matter how it is used will be accounted for.

átoll	*móngrel*	*cánnibal*
décal	*sýmbol*	*hóspital*
Éndicott	*Nárragansett*	*Connécticut*
scúttlebutt	*Nántasket*	*idíot*
báccarat	*Páwtucket*	*Lílliput*
sávssat	*pílot*	*Títicut*
bóycott	*cárpet*	*chárriot*
dúet	*póet*	*chéviot*
Ichabód	*Mohámmed*	*Ilíad*
kátydid	*bícuspid*	*mýriad*
Gálahad		*pýramid*
gónad	*drúid*	*períod*
Nímrod	*Dávid*	*ínvalid*
nómad	*flúid*	*tábanid*[18]
sássafrass	*menísc us*	*sýllabus*
álbatross	*Charýbdis*	*rhinóceros*
blúnderbuss	*papýrus*	*Príapus*
cháos	*Sílas*	*ábacus*
abýss	*súrface*	*génesis*
morass	*porpóise*	*ánimus*
Álcatraz	*Fernández*	
álvelez	*Ramírez*[19]	
búrkundaz		
tópaz		
Súez		
Nátchez		
ópsimath	*goliath*	*ázimuth*
sábbaoth	*behémoth*	*shíbboleth*
náprapath		*Elízabeth*
Kúrath	*Édith*	
ázoth	*bísmuth*	
Dérleth	*zénith*	

[18]Contrasts with words ending in /d/ are exceedingly rare: most words get final stress. The eleven words I have cited here are the only ones I know of that appear to be stressed by case (b).

[19]I have not been able to find any words ending in /z/ with antepenultimate stress, or any except Spanish names like those cited here which have penultimate stress. Thus, the contrast between cases (b) and (f) seems to be very marginal for voiced dental obstruents.

The contrast in stress between the words in the first column and those in the second two shows that case (b) must be able to disregard final sonorants and dental obstruents. In (43), however, there are no columns that would correspond to (42b) and (42c): all words that end in a nondental obstruent must receive final stress.[20]

(43)

hándicáp	*Bándersnátch*	*Mamároneck*
lóllypóp	*tsárevítch*	*tómaháwk*
wíckiúp		*Bólshevík*
Cárnáp	*éldrítch*	*shámrock*
sátráp	*sándwích*	*káyák*
bébóp	*núthátch*	*kópeck*
Beélzebúb		*póllywóg*
shíshkabób		*scálawág*
báobáb		*démagóg*
nábób		*múskég*
Cántáb		*shíndig*
Áhab		*húmbug*
físticúff	*súccotásh*	
shándygáff	*máckintósh*	
Jáckendóff	*bálderdásh*	
Lákóff	*Óshkósh*	
póntíff	*Wábásh*	
pílaf	*góulásh*	
Yúgoslav	*cámouflage*	
cýtoflav	*sábotage*	
rótanév	*pérsiflage*	
Négév	*garáge*	
Ázov	*móntage*	
	Árpege	

The only remaining consonant-final segment is [ǰ]. There are several puzzling problems connected with this segment.

[20]There are a large number of apparent exceptions to this generalization, e.g., *Árab*, *chérub*, *sýrup*, *hámmock*, *hávoc*, etc. These words will be treated the same way as the apparent exceptions in fn. 12. Cf. § 3.4 below.

[3]There are also a number of true exceptions, such as *Passáic*, *Willimántic*, *Potómac*, etc. I will list all exceptions to my final formulation of case (b) in § 3.4 below.

First of all, no polysyllabic word ending in [$\begin{bmatrix} V \\ -tns \end{bmatrix}$ ǰ] ever has stress on the final syllable—that is, final [ǰ] is always preceded by [ə]. Second, there are alternations between [ǰ] and [ž], which also appear to involve the length of the preceding vowel. Compare the words in (44a) with their alternants in (44b).

(44) (a) *múcilage* [myúwsl̥ǎž] (b) *músilage* [myúwsl̥əǰ]
prèstíge [prestīyž] *prèstígious* [prèstíǰəs][21]

Finally, there are no final sequences of the form *[...əž], which strongly suggests that, in final position at least, [ž] and [ǰ] are realizations of the same underlying segment. But which of the two is basic and under what conditions the more basic segment is converted to the less basic[22] are problems that I have not solved and can only indicate here. Thus, the revision of the environment for case (b) that I will propose below will not account for stress contrasts like those between *pílgrimage* and *advántage*, although on the face of it, it would seem that this contrast is a paradigm example of case (b) at work.

To sum up, then, the contrast in stress between (38) and (40) indicates that, with the exception of words ending in the six clusters in (39), any noun ending in a consonant cluster must receive final stress by case (f) of the MSR. Furthermore, all words that end in nondental obstruents must also be stressed by case (f), as the contrast in stress between (42) and (43) shows. That is, stress in nouns is only un-

[21]I am grateful to James D. McCawley for calling this example to my attention. Note that though the quality of the stressed syllable of *prèstígious* would suggest an underlying form /prestīž/, this form would produce the incorrect [prèstáyž] if the vowel shift were allowed to apply to this word. As far as I know, there are no words in English containing the phonetic subsequences *[...āy$\{^{ž}_{š}\}$...] or *[...āw$\{^{ž}_{š}\}$...], which suggests that the Vowel Shift Rule must be prevented from applying before palatal continuants for some totally mysterious reason.

[22]More precisely, the fact that [ž] appears when *mucilage* has tertiary stress on the final vowel, whereas [ǰ] appears when the final vowel bears no stress, is related to the stress differences between these two variant pronunciations; however, it is not clear what accounts for the stress alternations. For some tentative suggestions, cf. the discussion of *adjective* in § 7.1.

predictable when the noun ends in the sounds informally characterized in (45).

(45) $$\left\langle \left[\left\{\left[\begin{matrix}\text{-obs}\\ \text{+cor}\\ \text{+ant}\end{matrix}\right]\right\}\right]_1 \left\{\begin{matrix}\text{s}\\ \text{r}\\ \text{n}\end{matrix}\right\}\text{t} \quad \text{r}\left\{\begin{matrix}\text{d}\\ \text{n}\end{matrix}\right\} \quad \left\{\begin{matrix}\text{n}\\ \text{t}\end{matrix}\right\}\text{s} \right\rangle$$

In the following, for ease of exposition, I will refer to this unnatural and cumbersome class with the symbol "C_b." It designates that word-final class of sounds to which case (b) can apply to assign nonfinal stress in nouns. For nouns ending in anything but C_b, final stress is mandatory. Therefore, the unpredictability of stress that I called attention to above in the case of *Oregon* can be limited to those nouns which end in C_b, as *Oregon* does. For these nouns, stress must be marked lexically, but for all others it is predictably final. Thus, we must reformulate (41) as (46).

(46) $$\text{—} \left[\begin{matrix}\text{V}\\ \text{-tns}\end{matrix}\right] (C_b) \ ]_N$$

C_b must be parenthesized in (46) in order to account for the stress on words like *Américа*, *Aláska*, *Arizóna*, which end in a lax vowel. Interestingly, no word ending in a lax vowel is ever stressed by case (f), a fact presumably to be accounted for by a redundancy rule. I will return to the topic of redundancy rules in §10.

3.4. Let us now return to the problem of how stress is to be assigned to the large class of words like those in (47).

(47)

wállop	*spínach*	*hámmock*
dóllop		*búttock*
Phílip		*stómach*
tróllop		*dérrick*
stírrup		*hillock*
sýrup		*Dérek*

scállop		*Érik*
bíshop		*háddock*
hýssop		*cássock*
Árab		*crannog*
chérub		
scárab		
shériff	*rádish*	
tárriff	*rélish*	
sérif	*nébbish*	
ólive		
cólumn	*mónarch*	*chállenge*
móllusk	*órange*	*ónyx*
dámask	*lózenge*	*Lénox*

Note that all these words, since they do not end in C_b, would necessarily receive final stress by case (f). If the ASR were to apply, and then the SAR, the words would all end up incorrectly with 1–3 stress contours, as can be seen from the derivation in (48).

(48) Underlying form: /æræb/

1 case (f)
1 2 ASR
1 3 SAR
*[ærǽb]

In general, such phonetic sequences as [ærǽb] are impossible in English, so I propose to complete the derivation of the correct [ærəb] by adding a rule of Destressing, which will remove all traces of the original final stress in such words as those in (47), so that their final vowels will reduce. This rule is stated in (49).

(49) DESTRESSING

$$\left[\begin{matrix}\text{-cns}\\ \text{-tns}\\ \beta\ \text{stress}\end{matrix}\right] \rightarrow [\text{-stress}] / \left[\begin{matrix}\text{-cns}\\ \text{-tns}\\ \alpha\ \text{stress}\end{matrix}\right] C_0^1 \text{—}$$

where $\alpha > \beta$

This rule can explain the difference in stress contour between *Middlesex* and *Essex*. Since [ks] is not in C_b, the

final syllable, /seks/, of each of these words will receive primary stress. The ASR will then retract this primary stress in both words. At this point, rule (49) will apply to remove the secondary stress on the final syllable of *Éssex*, since a stressed weak cluster immediately precedes it, but the secondary (ultimately tertiary) stress on the final syllable of *Middlesex* will remain.

I have stated rule (49) in such a way that it will not only destress final syllables but also syllables earlier in a word. That this destressing is necessary was pointed out by Paul Kiparsky,[23] who noted that the rule should be made general enough to account for such alternations as those in (50), which were cited in SPE, page 161.

(50) *présentátion* [prɪyzɛntēyšn̩] — *présentation* [prɛzn̩tēyšn̩]
émendátion [ɪymɛndēyšn̩] — *émendation* [ɛmn̩dēyšn̩]

Assuming that the alternate forms of *present*, *emend*, *relax*, *progress*, and so on, with tense or lax initial vowels, have been accounted for, either by rule or by entering these words with different allomorphs of their prefixes in the lexicon, the contrasts in (50) could be accounted for by rule (49). If the prefix contained a lax vowel at the time rule (49) applied, rule (49) would destress the second vowels of the forms in (50), and the right-hand-column forms would result.

James L. Fidelholtz, in his compendious and important paper "Vowel Reduction in English," was the first to notice the contrasts between such words as those in (51), which provided the original impetus for rule (49).

(51) *Árab* [ærəb]
éyrab [ēyræb]
Cántab [kæntæb]

Working within the framework of SPE, Fidelholtz assumed the version of case (b) stated in (5). Thus, for him, it was not the stress pattern of words like *Árab* that constituted a problem, but rather that the last syllables of words like *Cántab* and *éyrab* and those in (25b) were unreduced. Noting that all words with unexplained tertiary stress had strong initial clusters, Fidelholtz proposed a rule that performed the

[23] In lectures at MIT in the spring of 1968.

inverse operation of rule (49): it assigned tertiary stress to the final syllable of words whose first syllable was strong.

There are two reasons why I have chosen rule (49) in preference to the solution proposed by Fidelholtz. The first has to do with the definition of C_b. As I argued above, all words that end in a nondental obstruent must receive final stress by case (f). Since *Arab* meets this condition, it should be finally stressed. To modify the definition of C_b so that the sequence /æb/ could be disregarded by the MSR in applying case (b) to such words as *Arab*, but not when applying it to such words as *baobab* and *Cantab*, would produce a highly complicated and unnatural MSR. A second, more important, reason for preferring rule (49) to Fidelholtz's solution is that only the former can account for the 1–0 stress contours of such verbs and adjectives as those in (52):

(52) (a) *hággard*, *hónest*, *módest*, *módern*, *sólemn*, *stúbborn*
(b) *chállenge*, *scávenge*, *góvern*, *wárrant*, *bálance*

Since these forms end in strong clusters, case (e) would incorrectly assign final stress, as Chomsky and Halle note on page 162 of SPE. But if the grammar contains rule (49) and an ASR that can shift stress back in disyllables, the 1–3 stress contour that will be produced by the application of the ASR and the SAR to such forms as *sólemn* will be converted to the correct 1–0 contour by rule (49). That is, the derivation of *sólemn* would proceed as follows:

(53) Underlying form: /sɔlemn/

1	MSR (eii)
1 2	ASR
1 3	SAR
1 0	Destressing
[sálәm]	Other rules

I thus conclude that rule (49) is to be preferred to the secondary stressing rule proposed by Fidelholtz. Rule (49) is a very general process, but it does, as do almost all rules

of English,[24] have a number of exceptions. An exhaustive list of all those I know is given in (54).

(54)

ádúlt	*Chémex*	*húbbub*
próduct	*Krávif*	*sýrinx*
prócess	*ázoth*	*lárynx*
ánnex	*Wábash*	*phárynx*
Athól	*hiccough*	*cómment*
autópsy	*affix*	

3.5. To give some idea of how successful the set of rules, including the modified version of case (b) stated in (46), case (f), and Destressing, is in accounting for the facts of primary-stress placement, I have given in (55) an exhaustive list of all nouns that these three rules assign incorrect stress contours to. Any noun that does not end in C_b but that has an unstressed final syllable not preceded by a weak cluster is an exception.

(55)

Róderick	*Jácob*	*Égypt*	*wórship*
máverick	*Ísaac*	*báiliff*	*túrnip*
límerick	*Cáleb*	*pláintiff*	*Dúnlop*
Potómac	*Jóseph*	*túlip*	*Nórthrop*
phóenix	*Énoch*	*júlep*	*Wínthrop*
Nátick	*eunúch*	*cátsup*	*Nórfolk*
fórceps			

To be sure, this number of exceptions is not negligible, but the number of nouns whose stress contours are correctly accounted for by restricting C_b to sonorants and dentals is many times this list, so I will provisionally assume that the definition of C_b given in (45) is a linguistically significant one, and I will incorporate it into the reformulation of the MSR that I will propose in §10.

4. Consequences of Case (f)

4.1. The addition of case (f) to the MSR occasions a number of other changes in the MSR. First of all, let us re-

[24]Exceedingly important for the theory of grammar is the fact that some phonological rules, such as the rule that tenses vowels prevocalically and the related rule of glide insertion, have *no* exceptions. I will explore some consequences of this constraint in a forthcoming paper, "English Vowel Non-sequences."

examine a possible simplification that was considered but rejected in SPE. It concerns the possibility of collapsing cases (a) and (b). On page 81 of SPE, Chomsky and Halle say (I have used square brackets for my own parenthetical comments),

> The similarity of these examples [adjectives with suffixes like those given in (8) above—JRR] to those of (18) [verbs like (1) above—JRR] (24) [nouns like (4) above—JRR] and (42) [adjectives like (7) above—JRR] is evident, and we therefore would naturally expect that the Main Stress Rule (25) [like my rule (6)—JRR] would account for [these examples] with at most minor modifications. Notice, in fact, that rule (25) would account for these examples directly if we were to extend condition (b) of (25) [= case (b)] to adjectives as well as nouns. We cannot simply do this, however, for consider the effect on the examples of (42), in particular those of column III. [These are the words *absurd*, *corrupt*, *immense*, *abstract*, *robust*, *overt*, *august*, *succinct*, *occult*, *direct*.] If these are assigned stress by the noun rule (25b), stress will fall on the first syllable.[29] [Footnote 29 deals with adjectives like *honest*, *modern*, and *haggard*, and proposes to label them as exceptions to the MSR, since they end up with initial stress, despite the fact that they end in a strong cluster. But, as I argued above, if my rule (49) is in the grammar, such adjectives become regular. —JRR] Similarly, the examples of column IV of (42) [consisting of the words *manifest*, *resolute*, *derelict*, *difficult*, *moribund*, *comatose*, *saturnine*, *retrograde*, *lachrymose*, *erudite*] with final double consonant require the verb rule (25e) [= case (e)], rather than the noun rule (25b), to account for the tertiary stress on the final syllable.
>
> We conclude, then, that the adjectives of (43) [adjectives with suffixes, like those in (8) above] are subject to the noun rule, while those of (42) are not. The basis for the distinction of these two classes is evident: the examples of (42) are primary adjectives, unanalyzable into stem plus adjectival suffix, while those of (43) are secondary adjectives, formed by adding a suffix to a stem. Thus primary adjectives are assigned stress by the verb rule (25e), while secondary adjectives are assigned stress by the noun rule (25b).

Thus, Chomsky and Halle reject the possibility of allowing the environment of case (b) to be stated so that it will apply to adjectives as well as to nouns, as in (56),

(56) $$\text{—} \begin{bmatrix} \text{V} \\ \text{-tns} \end{bmatrix} C_0 \;]_{\text{NA}}$$

because this formulation would allow the derivation of such

incorrect forms as *$\overset{1}{s}\overset{0}{u}cc\overset{}{i}nct$, *$\overset{1}{o}\overset{0}{c}c\overset{}{u}lt$, *$\overset{1}{d}\overset{0}{e}r\overset{}{e}l\overset{}{i}ct$, *$\overset{1}{m}\overset{0}{o}r\overset{}{i}b\overset{}{u}nd$. But, as I argued in §3.3 above, the C_0 in (56) must be replaced by C_b, as defined in (45); otherwise such incorrectly stressed nouns as *$\overset{1}{p}\overset{0}{r}\overset{}{e}c\overset{}{i}nct$, *$\overset{1}{c}\overset{0}{o}b\overset{}{a}lt$, *$\overset{1}{c}\overset{0}{a}t\overset{}{a}r\overset{}{a}ct$, *$cumm\overset{1}{e}r\overset{0}{b}\overset{}{u}nd$ would also result. That is, case (b) of SPE could not be extended to apply to adjectives because the formulation of this case as given in SPE is too inclusive, even for nouns. If C_0 in (56) is replaced by C_b, the true parallel between the stress contours of the adjectives in (57a) and the nouns in (57b) becomes apparent.

(57)

(a)	(b)
$\overset{1}{a}bs\overset{}{u}rd$	$p\overset{1}{e}t\overset{}{a}rd$
$corr\overset{1}{u}pt$	$tr\overset{1}{a}ns\overset{3}{e}pt$
$imm\overset{1}{e}nse$	$r\overset{1}{o}m\overset{}{a}nce$
$abstr\overset{1}{a}ct$	$\overset{1}{i}ns\overset{3}{e}ct$
$r\overset{1}{o}bust$	$\overset{1}{g}ymn\overset{3}{a}st$
$\overset{1}{o}v\overset{}{e}rt$	$dess\overset{1}{e}rt$
$\overset{1}{a}ug\overset{}{u}st$	$rep\overset{1}{a}st$
$succ\overset{1}{i}nct$	$pr\overset{1}{e}c\overset{3}{i}nct$
$\overset{1}{o}cc\overset{}{u}lt$	$res\overset{1}{u}lt$
$dir\overset{1}{e}ct$	$pr\overset{1}{e}f\overset{3}{e}ct$
$\overset{1}{m}an\overset{3}{i}fest$	$\overset{1}{a}nap\overset{3}{e}st$
$\overset{1}{d}\overset{3}{e}r\overset{}{e}l\overset{}{i}ct$	$\overset{1}{a}n\overset{3}{a}l\overset{}{e}ct$
$\overset{1}{d}if\overset{3}{f}\overset{}{i}cult$	$\overset{1}{V}\overset{3}{a}nderb\overset{}{i}lt$
$\overset{1}{m}\overset{3}{o}r\overset{}{i}b\overset{}{u}nd$	$\overset{1}{c}\overset{3}{u}mmerb\overset{}{u}nd$

There is one systematic difference between the adjectives of (57a) and the nouns of (57b): disyllabic adjectives typically do not retract stress by the ASR (cf. §6.6 below for some discussion of this fact), whereas the applicability of the ASR to a disyllabic noun is not generally predictable. Otherwise, however, the generalization for nouns and adjectives is clear: if a noun or an adjective does not end in C_b, final stress is mandatory.

Thus, it would appear that the argument given in the passage quoted above is invalid and that case (b), amended so as to specify C_b in its environment, can be used to account for the stress of adjectives ending in a suffix, such as those in (8).

Moreover, extending case (b) to all adjectives has an added advantage, for under case (a) there are many adjectives whose stress can only be accounted for by postulating the existence of otherwise unmotivated morpheme boundaries. An example

is $\overset{1}{a}d\overset{0}{e}qu\overset{}{a}te$, which must be analyzed /ædV̆k^{w}+V̆t/, if case (a) is to apply. And case (a) would have to be the case of the MSR that is operating here, for, if case (e) were to apply, the incorrect *$\overset{1}{a}d\overset{0}{e}qu\overset{}{a}te$ would be produced. Thus, the stress contrast between $\overset{1}{a}d\overset{0}{e}qu\overset{}{a}te$ and $d\overset{1}{e}cr\overset{0}{e}p\overset{}{i}t$ is only accountable for, under the analysis proposed in SPE, by the device of assuming a morphological analysis for the former, but not for the latter, word. This proposal again amounts to marking stress with the symbol "+," a device I consider no more justifiable for the pair $\overset{1}{a}d\overset{0}{e}qu\overset{}{a}te$–$d\overset{1}{e}cr\overset{0}{e}p\overset{}{i}t$ than for the stress difference between the nouns in (17) and those in (18). Moreover, I believe that in both cases it is possible to give a more satisfactory analysis of the stress difference than the one proposed in SPE.[25] I will, however, defer this reanalysis until I have taken up the matter of how verbs are to be stressed, which will be the topic of §4.3 below.

Notice also that the device of assuming an otherwise unmotivated morpheme boundary, as in *adequate*, must be resorted to in a large number of cases. Some examples are given in (58).

(58) (a) *accurate, profligate, intricate, adequate, obstinate*

(b) *impudent, indigent, succulent, patient, salient, feculent, esculent, diligent, exigent, cogent, ancient, opulent, sapient, lambent, imminent, immanent, decent, recent, strident, lenient, prurient, esurient, silent, truculent, latent, patent, renitent, frequent*

(c) *stagnant, pregnant, mendicant, extravagant, arrogant, insouciant, brilliant, flamboyant, poi-*

[25]Aside from the fact that the analysis in SPE must rely on ad hoc morpheme boundaries to assign stress correctly to such words as *adequate*, there are two fairly clear cases where what seem to be well-motivated morpheme boundaries must be disregarded, in order to prevent case (a) from incorrectly assigning antepenultimate stress: the words $\overset{1}{i}ll\overset{0}{i}cit$ (cf. *license*) and $\overset{1}{e}xpl\overset{0}{i}cit$ (cf. *explicate*). It cannot be maintained that stress can never be placed on the prefixes *in-* and *ex-* as a result of some special following boundary, because of such words as $\overset{1}{i}mp\overset{0}{o}tent$ and $\overset{1}{e}xquis\overset{0}{i}te$, where stress does appear on these prefixes. In §4.3, I will suggest reasons for positing /in+līk+ite/ as the underlying form for *illicit*, where the final /e/ will cause the tense underlying /ī/ in the stem to lax before dropping.

gnant, exuberant, flagrant, fragrant, reluctant, truant

(d) *obstreperous, papaverous, nidorous, ubiquitous, furfurous, sedulous, orgulous, invidious, insidious, punctilious, egregious, fastidious, pernicious, precarious, nefarious, copious, impetuous, deciduous, arduous, indigenous, serious, hideous, vicarious, deleterious, spurious, surreptitious, previous, lascivious, meticulous, boisterous, exiguous*

(e) *gordian, quotidian, ogygian, permian, alburnian, riparian, milesian, lacertian, cerulean*

It seems to me to be totally gratuitous to assume that English speakers must analyze the words in (58) into stem + affix in order to determine their stress. Rather, the correct generalization about stress on adjectives appears to be that stated in (59).

(59) All adjectives ending in $\begin{bmatrix} V \\ -tns \end{bmatrix} \begin{Bmatrix} [-obs] \\ s \\ (n)t \end{Bmatrix}$ are stressed by case (b). All others receive final stress.

4.2. Thus, (59) suggests that case (b) should be formulated to apply to both nouns and adjectives, although in slightly different ways. For nouns whose final vowel is lax, those which end in a sonorant or *any* dental (and the clusters specified in (45)) can be non-finally stressed. For adjectives whose final vowel is lax, only a subset of the dentals, namely, /s/ and /t/ and the single cluster /nt/, can be disregarded in assigning nonfinal stress by case (b). Furthermore, while stress is not predictable for nouns ending in $\begin{bmatrix} V \\ -tns \end{bmatrix}$ (C_b), if an adjective ends in a permitted group, stress is never final: the adjective *must* be stressed by case (b).[26]

[26] I know of only seven real exceptions to (59) (but cf. (62) below): the adjectives *bizarre, remiss, parallel, intent, content, nonchalant,* and *wayward*. The stress on the first three words will presumably have to be lexically marked. The analysis of *parallel* into [pæræ[lel]$_S$]$_A$, which is proposed on p. 101, is not independently justifiable, as far as I know. Thus, the stress contour on this word must be regarded as irregular.

There are three large classes of adjectives that constitute apparent counterexamples to (59)—adjectives in *-ic, -id,* and *-ive*. I would concur with Chomsky and Halle in deriving the suffix *-ic* from an underlying /ik+æl/ (cf. p. 88). Below, in §4.3, I will attempt to justify deriving *-id* from a disyllabic underlying representation. In §7.1 I will take up the difficult matter of how adjectives in *-ive* are to be stressed, in connection with the discussion of case (c).

[27] I assume that the final syllables of the words *malapert* and *taciturn* must have some stress, because the consonants preceding them are aspirated, which only happens pretonically.

To see that the only consonant cluster that can be disregarded in adjectives by case (b) is /nt/, as in the forms in (58b) and (58c), compare the nouns in (40b) and (40c), which have nonfinal stress, with the adjectives in (60), which all must have been stressed by case (f).

(60) *manifest, robust, august, aghast*
inert, alert, malapert[27]
taciturn,[27] *forlorn*
absurd

As was pointed out in §3.4 above, the words in (61) constitute only apparent counterexamples to (59), for rule (49), Destressing, would remove all stress on the final syllable, if case (f) and the ASR had applied.

(61) *modest, honest*
modern, azurn, stubborn, auburn
haggard
lavish

The five words in (62) are also not accounted for by (59) and rule (49),

(62) (a) *forward, awkward, stalwart*
(b) *earnest, perfect*

but it may be possible to amend rule (49), so that vowels will be destressed if an optional glide follows the C_0^1 specified in the rule, and to order rule (49) after the rule that converts the sequence /erC/ to the sequence [ərC]. If the first possibility can be realized, the words in (62a) will cease to be exceptional, and if the suggested rule ordering can be maintained, the words in (62b) will no longer be exceptional. However, I have not studied the wider implications of these revisions enough to know whether they will cause complica-

tions elsewhere. In any case, the number of exceptions to (59) is very small.

If I have been correct in arguing that (59) is the correct generalization for stress in adjectives, then cases (a) and (b) of the MSR need not be distinguished, except insofar as the classes of final consonants that can be disregarded in assigning nonfinal stress to the two categories are not the same. The fact that C_b for adjectives—that is, the class of sounds specified in (59)—is a subset of C_b for nouns (I will designate these classes as $C_b(A)$ and $C_b(N)$, respectively) is specifiable with the help of the angled bracket notation. I will defer a formal statement of this regularity until §4.4 below. The fact that SPE specifies that affixes beginning with a consonant can be disregarded in applying case (a) (to produce *establishment*, etc.) will be discussed in §8. This apparent difference between cases (a) and (b) can thus be sidestepped, and the two cases collapsed.

But what of the stress on nouns ending in affixes, such as those in (63)?

(63)	(a)	(b)	(c)
	inheritance	*contrivance*	*independence*
	burial	*betrayal*	*transferral*[28]
	opprobrium	*decorum*	*addendum*
	gradient	*opponent*	*correspondent*
	lubricant	*assailant*	*defendant*
	rebellion		
	servility		

All the words in (63) end in $C_b(N)$, and all must be assigned stress by case (b). Apparently, stress is never final, although

[28]The noun-forming affix *-al* raises some problems of considerable theoretical interest. Apparently it can only occur after the *phonetic* sequence $\left[\begin{bmatrix}+\text{voc}\\+\text{stress}\end{bmatrix}\left(\begin{bmatrix}-\text{voc}\\-\text{cns}\end{bmatrix}\right)[+\text{cns}]_0^1\right]$ (that is, there are words like *betrothal*, *refusal*, *betrayal*, *disavowal*, *acquittal*, *dismissal*, *rebuttal*, *referral*, etc., but none like **acceptal*, **resistal*, **convinceal*, **fidgetal*, **promissal*, **abandonal*, **developal*, etc. The only exceptions to this generalization that I have in my dialect are the words *rental*, *reversal*, *dispersal*, and *rehearsal*). This situation suggests either that the affix must be added to a word after stress has been assigned (in fact, if *dismiss* and *rebut* can be argued to end in geminate obstruents, it cannot be added before the rule of Cluster Simplification), or that there must be phonetic output conditions on the well-formedness of words. I will return to this interesting topic in §9.

it is not in general predictable whether a noun that ends in $C_b(N)$ will be stressed finally or nonfinally (witness the contrasts in (40)), if the noun ends in an affix containing a lax vowel.[29] Since this generalization can be captured in a redundancy rule, I propose to dispense with case (a) altogether. Thus, in Part II, where the MSR will be given its final formulation, I will make no mention of affixes. The redundancy rule will also be stated in Part II.

4.3. Let us now reconsider the problem of how verbs are to be assigned primary stress. Chomsky and Halle have proposed that the MSR should assign either penultimate or final stress to all verbs, and have formulated in case (e) (cf. (2) above) a rule that will have this effect. They thus claim that, although nouns may have stress assigned on any one of the last three syllables, verbs may not be stressed on the antepenultimate syllable.

There are two fairly clear counterexamples to this claim—the verbs *jettison* and *monitor*. Even if it can be maintained that the last verb is denominal, a possibility for which there seems to be no independent evidence, no such possibility exists for *jettison*. These examples suggest that case (b) should be extended to stress all major categories. That is, just as the nouns in (64b) and (64c), by virtue of the strong syllables in their penults, receive penultimate, instead of antepenultimate, stress, so the verbs in (65b) and (65c) receive penultimate stress.

(64)	(a)	(b)	(c)
	venison	*horizon*	*phlogiston*
	integer	*October*	*September*
	arsenal	*adrenal*	*utensil*
	modicum	*decorum*	*memorandum*

(65)	(a)	(b)	(c)
	jettison	*emblazon*	*abandon*
			determine
	monitor	*maneuver*	*remember*
		reconnoiter	
		inveigle	
		bamboozle	

[29]There are very few exceptions to this claim. The word *protestant*, which probably is one, will be discussed in §7.1. Furthermore, there are certain affixes, such as *-on*, which sometimes bear stress (cf. *phenomenon*, *electron* [the derivation of the stress contour on this word will be discussed in §7.1]).

The above examples suggest that case (b) is applicable to verbs (immediately below I will argue that there are many more verbs with the antepenultimate stress than one would expect if this case of the MSR applied to verbs), and, since adjectives can be stressed by case (b) (*indigent*, *familiar*, etc.) or by case (f) (*bizarre*, *agog*), one might also expect to find verbs that receive their stress by case (f). In fact, many such verbs exist. A sample is given in (66).

(66) (a)

equip	*abet*	*amass*	*ambush*	*attack*
kidnap	*abut*	*caress*		*ransack*
hobnob	*rebut*	*harass*		*highjack*
demob	*regret*	*possess*		*bushwhack*
	forget	*emboss*		*renege*
	acquit	*nonplus*		*pettyfog*
	omit	*redress*		*lollygag*
	combat	*surpass*		
	revet	*dehisce*		
	beset			
	boycott			
	maraud			

(b)

succumb	*begin*	*rebel*	*aver*
		excel	*demur*
		appal	*inter*
		caterwaul	*deter*

Unless these verbs were to be derived from underlying forms containing a geminate final cluster, an analysis for which no independent evidence exists (except possibly for *rebut*—cf. fn. 28), case (e) would incorrectly assign penultimate stress to them. However, if case (f) is extended to apply to verbs, as well as to nouns and adjectives, primary stress can be correctly placed on the final syllable. The ASR will then regularly retract the stress on the three verbs *caterwaul*, *lollygag*, and *pettyfog*, and will apply exceptionally to a small set of disyllabic verbs like *ambush* and *bushwhack* to retract their stress as well. These verbs will have to be lexically marked, for, as is the case with disyllabic adjectives, stress is normally not retracted in disyllabic verbs (cf. (95) below).[30]

[30] I propose that the two pronunciations of the verb *harass*, i.e., [hə ˈæs] and [ˈhærəs], be accounted for, not by assuming an underlying final geminate for the first, although not for the second pronunciation

We have seen, then, that the verbs in (66) can be stressed by case (f) and those in (65) by case (b). Why must there be a case (e) at all? Verbs that end in strong clusters, like *cajole* and *lament*, can be stressed by case (f), instead of by case (e), and it could be argued that disyllabic verbs with 1–0 stress contours, like those in (67),

(67)

gossip	*credit*	*promise*	*vanish*	*frolic*
wallop	*edit*	*menace*	*finish*	*rollick*
gallop	*fidget*	*preface*	*relish*	
	covet	*solace*	*manage*	
	plummet	*premise*		
	visit			
	pivot			
	merit			
	vomit			
	profit			
	limit			

should be derived not by case (e), but by the sequence case (f)–ASR–Destressing.

There is, however, a class of words that seems to require the retention of case (e): verbs with more than two syllables whose penult, though containing a weak cluster, bears main stress. Examples of this type of verb appear in (68).

(68)

(a)

develop	*inhabit*	*embarrass*	*admonish*
envelop	*cohabit*		*diminish*
	inhibit		*embellish*
	exhibit		*establish*
	prohibit		*abolish*
	inherit		*demolish*
	solicit		*replenish*
	elicit		*disparage*
	deposit		

(this is the analysis proposed by Chomsky and Halle on p. 46), but rather by assuming that the ASR may optionally retract the stress on this verb. Case (f) will assign final stress, and, if the ASR does not apply, the first pronunciation results. If, however, the ASR does apply, the intermediate form [ˈhærˈæs] will result. But rule (49), Destressing, will now apply, and the secondary stress on the second vowel will be removed, eventually causing it to reduce to [ə].

(b) *imagine*
examine
endeavor
consider

If the verbs in (68) were to be stressed by case (b), as formulated in SPE, such incorrect forms as **develop*, **exhibit*, and **abolish* would result. Alternatively, if case (f) were to apply, the ASR would retract the stress to the antepenult, not to the penult, and such incorrect forms as **develop*, **exhibit*, and **abolish* would result. To be sure, if stress could somehow be blocked from retracting to the antepenult and could be retracted instead to the penult, Destressing would cause the final vowels to reduce, but there appears to be no general way to make the ASR perform in this way.[31] Thus, the words in (68) seem to justify case (e) of the MSR.

However, there are other facts that invalidate this conclusion. Since I have proposed to allow verbs to be stressed either by case (b) or by case (f), and since I have shown that the choice of case to be used in stressing nouns and adjectives is phonologically determined—that is, only a noun or an adjective ending in $C_b(N)$ or $C_b(A)$ can be stressed by case (b)—it is natural to enquire whether there is not also phonological conditioning in the choice of which of these cases to apply in stressing verbs. The verbs in (65), which show most clearly that case (b) can apply to verbs, all end in sonorants. By and large, every verb that ends in a lax vowel followed by a single sonorant must receive nonfinal stress by the MSR. There are ten counterexamples cited in (66b), which constitute an exhaustive list, to the best of my knowledge. In contrast, there are hundreds of verbs like *gambol, chatter, blossom,* and *cotton (to)* that conform to this generalization and show it to be an important one. Thus, $C_b(V)$ seems to include the class of sonorants, as do $C_b(N)$ and $C_b(A)$.

However, there are apparently no final clusters in $C_b(V)$. For convenience, I have relisted in (69) the clusters in $C_b(N)$.

(69) *st, rt, nt, rd, rn, ns, ts*

[31]Words like *Achilles* and *neosynephrine*, in which such a retraction must take place, appear to be real exceptions to the ASR. They will be discussed in connection with this rule, in § 5.3 below.

As the examples in (70) show, any verb ending in one of these clusters must receive final stress by the MSR.[32]

(70)

molest	*desert*	*lament*	*reward*	*adorn*	*incense*
accost	*cavort*	*repent*	*afford*	*adjourn*	*condense*
flabbergast	*resort*	*recant*	*accord*	*return*	*dispense*
arrest	*exert*	*relent*	*award*		*recompense*
	retort	*affront*	*regard*		*enhance*
	disport	*torment*	*retard*		*finance*
	escort	*fragment*	*record*		*advance*
	assert	*segment*	*bombard*		*commence*
	depart	*gallivant*			*evince*
					convince
					ensconce

Thus, not even the single cluster that can be disregarded when assigning nonfinal stress to adjectives, the cluster /nt/, can be disregarded when stressing verbs. I also think it can be argued that not even the two obstruents /s/ and /t/, which are the only two in $C_b(A)$, can be disregarded if they occur at the end of a verb. That is, I believe the correct generalization about stress in verbs to be that stated in (71).

(71) Polysyllabic verbs ending in a lax vowel followed by at most a single sonorant are nonfinally stressed; all others receive final stress.

What are the exceptions to this claim, aside from the ten verbs of (66b)? On the one hand, the verbs in (68a), and on the other, those in (72), which cannot be accounted for by the sequence of rules case (f)–ASR–Destressing, because their first syllables contain strong clusters, and Destressing would not be able to apply.

(72)

worship[33]	*quiet*	*practice*	*furnish*[33]	*garnish*
	forfeit	*trespass*	*burnish*[33]	*languish*
		purchase[33]	*varnish*	*vanquish*
		surface[33]	*brandish*	
		service[33]	*blandish*	
		canvass		

[32]I know of only one real exception to this claim—the verb *countenance*. The verbs of (52b) will be handled by Destressing, as has been indicated above.

[33]As I pointed out in § 3.3 above, in connection with adjectives like

There is, however, a further fact about verbs that suggests a way of preserving generalization (71) in the face of these apparent counterexamples: all verbs that end in an obstruent and that have penultimate stress have lax vowels in their penults. That is, there are no verbs like **devēlop* [dəvíyləp], **solīcit* [səlâysət], **embārrass* [embêyrəs], **gōssip* [gôwsəp], **fīdget* [fâyjət], and **mēnace* [míynəs].[34] Since there are nouns that do not conform to this regularity, such as those in (73),

(73) *pīlot, Tōphet, tōilet, sēcret, ēgret, affidāvit, clīmate, Pūget, pīrate*
Mīdas, Sīlas, Vēnus, mīnus, ōnus, Ūranus, pēnis, ānus, bōnus, gēnus, fōetus, fōcus, crōcus, frācas
zēnith, Ēdith, behēmoth
Dāvid

it would appear that some rules must be formulated to explain this phonological difference between nouns and verbs.

What I propose is that the verbs in (68a) and (72) be given underlying representations ending in a lax /e/. That is, I assume that *develop* and *menace* are to be derived from /dVvelVpe/ and /menVse/, respectively. Stress will be assigned to the antepenult by case (b), and the independently motivated rule of *e*-Elision (cf. SPE, pp. 45–46) will delete the final vowel.[35] The final /e/ can be used to explain the absence of long vowels in (68a), for the Trisyllabic Laxing Rule (cf. pp. 180–181) would shorten any underlying long vowel in this position. In fact, there are a few rather marginal cases that suggest that it is this final /e/ which I am proposing that accounts for some lax vowels in verbs that show up in apparently related forms as tense vowels. For example, consider *credit*. Presumably, the underlying morpheme is /krēd/ (cf. *crēdence, crēdo*), so somehow this vowel must be shortened in the verb. If an underlying representation like /krēd+ite/ is assumed, the position of stress and the shortening of the vowel are accounted for. Similarly, if *estăblish* is to be related to *stāble*, or *fĭnish* to *fīnal* and *fīnite*, or *dimĭnish* to *mīnus* and *mīnor*, or *pŏsit* to *pōse* and *compŏsite* to *compōse*, all of which seem reasonable, a final /e/ can be used to account for the vowel alternations. The fact that this final vowel does not cause the final /t/ to become [s] in words like *credit, inherit*, and *licit* can be accounted for by marking each stem (or possibly just the morpheme (?) /ite/) [-spirantization], or by postulating that the deleted vowel is low, along the lines suggested in footnote 35. I have not come to any decision on this matter.

The above remarks apply in a limited way to adjectives: any penultimately stressed adjective that ends in /V̆d/ or /V̆t/ has a lax vowel in its penult.[36] Thus, adjectives like **decrēpit*

earnest and *perfect*, these words might not constitute genuine counterexamples to Destressing.

[34]There are only two exceptions to this claim, as far as I know—the verbs *nōtice* and *pīlot*. If it is correct to analyze the former verb as containing the morpheme *note*, then the long vowel in *notice* is because this morpheme never laxes or reduces (cf. *denotation*). Such verbs as *quīet* and *intūit*, which have long penults, can be analyzed as having short vowels in their underlying representations, with these vowels later being tensed in the environment of a following vowel.

[35]There is an interesting gap in the distribution of final lax vowels in verbs. There are verbs in /i/ (cf. *bury, hurry, harry, marry*, etc.), verbs in /e/ (cf. *allege–allegation, produce–production*, etc.), and verbs in /o/ (cf. *follow, shadow* [note that here, the /d/ is realized as the flap [D], which shows that no stress has been assigned to the final vowel], *borrow, wallow*, etc.). There are no verbs in /u/, but I suspect that there are no nouns in /u/ either, and that examples like *hindu* should come from /hindō/, by case (f) and the ASR, thus assigning a 1–3 stress contour, which to my ear is correct, instead of the 1–0 contour assigned by SPE. I will take up this matter again in §7.6. What is more important is that there are no verbs ending in phonetic [ə], except some clearly denominal verbs like *to samba, to rhumba, to conga*, and *to subpoena*. I know of no verb ending in [ə] that has no related noun. This gap could be explained by assuming that the rule of *e*-Elision deletes any final nonhigh nonround vowel for verbs (and adjectives, as will be seen shortly, for the facts noted in this footnote hold also for adjectives), while being restricted to deleting only /e/ for nouns. That is, the rule would be stated as the following:

$$\begin{bmatrix}+\text{voc}\\-\text{tns}\\-\text{back}\\-\text{high}\end{bmatrix} \rightarrow \emptyset \Big/ \left[\frac{\quad}{\langle -\text{low} \rangle}\right] \langle \text{N} \rangle$$

[36]Note that adjectives ending in /s/, the only other obstruent that can be disregarded in applying case (b) to adjectives, do not manifest this property. That is, although there are no verbs (except *notice*) that

[dəkrĭypət], **tăcit* [tēysət], and **lĭcit* [lăysət] do not exist.[37] All adjectives in *-id* are preceded by a lax vowel, which Chomsky and Halle note on page 181, footnote 16, of SPE; I would propose to account for this fact by representing *-id* as /ide/ in underlying representations. Thus, in my analysis, the stress difference between *ádequate* and *decrépit* is not accounted for by assuming a morphological analysis for the former, but not for the latter. Rather, I assume the latter to be derived from the underlying form /dV̆krepV̆te/. My solution seems to be slightly preferable, since it correctly excludes such forms as **decrépit*, but not much is at stake here. Similarly, I propose to account for the contrast in stress between verbs like *fídget* and *abét* by postulating a final /e/ for the former verb but not for the latter, and by restricting $C_b(V)$ to sonorants only. Thus, any verb ending in an obstruent (like those in (66a)) will be stressed by case (f), while all others will be stressed by case (b).

I concede that to analyze only certain verbs as ending in /e/, which will ensure that case (b) will apply, but others as ending in obstruents, which can only be stressed by case (f), is little better than the solution proposed in SPE—that *fidget* and *abet* be entered as /fiǰV̆t/ and /V̆bett/, respectively—but my solution at least has the slight additional virtue of accounting for the absence of penultimate long stressed vowels in verbs ending in obstruents, so I will very tentatively adopt it below.

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end in [. . . V̄C$_0$əs], there are a number of adjectives that do. A sample follows:

decórous
sonórous
desírous
hēinous
pórous
fāmous
vēnous
vínous
fíbrous
nítrous
mūcous
bógus

[37] If the two words *lĭcit* and *līcense* are to be related, as was suggested in fn. 25, deriving the former from /līs+ite/ will allow the shortening of the stem vowel to be accounted for by the Tri-syllabic Laxing Rule, as was the case for verbs like *credit, finish*, etc.

4.4. To recapitulate, I am proposing that cases (a) and (b) of the MSR be merged and that case (e) be dispensed with altogether in favor of an analysis involving the deletion of a final /e/ (or possibly /æ/). All major categories can then be stressed either by case (b) or by case (f), subject to slightly differing conditions as to the phonetic properties of what consonant(s) can be disregarded in applying case (b). For verbs, only sonorants can be disregarded; for adjectives, sonorants and *s*, *(n)t*; and for nouns, sonorants, dentals, and the clusters specified in (45). Thus, we see that $C_b(V)$ is a subset of $C_b(A)$, which in turn is a subset of $C_b(N)$. This subset relationship can be captured notationally by the device of angle brackets, as I have done in (74), which formally expresses the arguments presented in §3 and §§4.1–4.3 above.

(74)

$$V \rightarrow [1\ \text{stress}] \,/\, \text{——}\ C_0\left((W)\begin{bmatrix} V \\ -\text{tns}\end{bmatrix}\left(\left\langle\left\langle \begin{matrix}[-\text{obs}] \\ s \\ (n)t \\ \begin{bmatrix}+\text{cor}\\+\text{ant}\end{bmatrix} \\ \begin{Bmatrix}s\\r\end{Bmatrix} t \\ r\begin{Bmatrix}d\\n\end{Bmatrix} \\ \begin{Bmatrix}n\\t\end{Bmatrix} s \end{matrix}\right\rangle_{b}^{a}\right\rangle_{b}^{a}\right)\right)$$

$$\left\langle \langle N \rangle_{a}^{a} A \right\rangle_{b}$$

5. Further Extensions of the Alternating Stress Rule

5.1. In this section, I will take up the problem of completing the modifications of the ASR that were begun in §2 above, where I argued that the ASR must be allowed to apply to disyllables. Consider, for example, the word *píccalílli*.

How can the 1–3 stress contour of this word be obtained? If it is entered in the lexicon in its conventional orthographic form, the incorrect **píccalílli* will be produced by case (b) and by the rule that assigns secondary stress to words like *Monongahela*, rule [120] in chapter 3 of SPE. If entered as /pV̆kælV̆li/, the incorrect form **[pəkǽləlīy]* will result. If

entered as /pikælily/, the incorrect *[pikələləy] will result. The only solution possible within the framework of SPE, as far as I can see, is the representation /pikVlill+y/. Case (a) will disregard the /+y/ "affix," assigning [1 stress] to /lill/, and case (d) will then retract the stress. Once again, as was the case with the contrast between (17) and (18), where Chomsky and Halle posit a morphemic analysis for words like *carbine*, but not for *boutique*, so that rule [158] would apply to cause stress retraction only for the former words; or as was the case with the contrast between *adequate* and *decrepit*, the set of rules given in SPE can account for the stress contrast between *piccalilli* and *vermicelli* only by assuming a morphemic analysis for the former word, but not for the latter. Other words that would be assumed to be morphologically complex are those in (75a), while those in (75b) and (75c) would have to be analyzed as single morphemes.

(75) (a) *cassowary, Tipperary, McGillicuddy, testimony, Albuquerque, allegory,*[38] *category,*[38] *capillary,*[39] *Piccadilly,*[40] *Moosilauke, apothecary, territory, pickaninny, melancholy, Alleghẽny, miscellany, mercenary, parsimony, ceremony, alimony, Mungojerry, janizary, acrimony*

[38]It might seem plausible to argue that *allegory* must be represented as /ælVgɔr+y/, on the basis of the word *allegorical*, which, it could be claimed, must contain the morpheme /ælVgɔr/, followed by the affix sequence /ik+æl/. I do not think, however, that this analysis is tenable. Rather, it seems to me that *allegorical* should be derived as follows:

Base form:	/ælVgɔri+ik+æl/
Vowel Drop	Ø
MSR (b)	1
Rule [120]	2 1
SAR	3 1
Vowel Reduction, etc.	[æləgɔrəkl]

The rule of *Vowel Drop* that I propose would be stated roughly as follows:

$V \rightarrow \phi / VC_0$——+V

This rule is independently motivated. For example, it can be used to account for alternations like the following:

propaganda–propagandize (from *propagandɸ+ize*)
cello–cellist (from *cellɸ+ist* [but why *solo≡ist, ob≡ist*?])

(b) *Garibaldi, macaroni, fettucini, Alberghetti, tuttifrutti, cognoscenti, Maseràti, Giacomètti, pèperòni*

(c) *Tallahassee, Mississippi, Assiniippi, Chattahoochee, abalone, kamikaze, Cincinnati, mulligatawny, Tatamagouchi, Winnipesaukee, Ypsilanti, salmagundi, Hindustani,*[41] *gallimaufry, Punxutawney*

allege–allegation (from /æl+legɸ+æt+iVn/)
Africa–African (from /æfrVKɸ+æn/; compare *suburb–suburban*)
Mexico–Mexican (from *Mexicɸ+an*)

There are various complicated restrictions on the operation of this rule—thus, high vowels do not delete before low vowels (cf. *remedy+al* ⊁ **remedal*; *gregory+an* ⊁ **gregoran*; *virtue+al* ⊁ **virtal*, etc.), but /i/ does delete before affixes beginning with /i/ (cf. *analogɸ+ize, analogɸ+ic, germanɸ+ism*), though other vowels often do not (cf. *Shintoism, euphuism, Yankeeism*). The whole rule needs much more study, but it seems clear that one or more processes of vowel deletion must be assumed to exist in English. Thus, I see no reason to assume a morphological analysis of words like *allegory*. Precisely the same remarks apply with respect to the word *category*.

[39]As with *allegorical*, I would suggest deriving *capillarity* from /kæpVlæri+iti/, with the rule of Vowel Deletion operating to delete the last vowel of the stem. In other words, I see no reason to assume, merely because of *capillarity*, that *capillary* has any analysis.

[40]I pronounce this word with a 1–3 stress contour, although most dialects have a 3–1 contour. Similarly, some speakers, according to Kenyon and Knott, pronounce *Moosilauke* with a 3–1 stress contour. I will argue immediately below in favor of extending the ASR so that it will retract the stress of words like those in (75a) but not of those in (75b) or (75c). As in other cases involving the ASR, whether this rule applies to a form must be marked lexically. Thus, I would expect to find words like *Piccadilly* or *Moosilauke* being given 1–3 contours by some speakers, but 3–1 contours by others, just as words like *lemonade* and *magazine* can have either contour. Just as I would find it dubious to assert that speakers who say *magazine* impose an internal analysis on this word, while speakers who say *magazine* do not, I would also find it dubious to make the corresponding claim about the two possible pronunciations of *Moosilauke*. In the case of *magazine*, Chomsky and Halle propose to account for the differing pronunciations by means of a rule feature indicating whether the ASR applies.

(But cf. the alternative proposal involving =, on p. 157.) Why should such a dissimilar device be adopted in the case of words like those in (75)?

[41]Note that this word, although it must obviously be analyzed as being at least trimorphemic (i.e., Hindu+stan+i), cannot be assumed to end in /+y/ within the framework of SPE, because the sequence of rules

The arbitrariness of this proposed way of accounting for the contrast between *piccalilli* and *vermicelli* should be apparent. As was the case with the *carbine–boutique* contrast, and with the *adequate–decrepit* contrast, no facts other than those of stress retraction are accounted for by postulating final /+y/ affixes for the words in (75a) but not for those in (75b) and (75c). I therefore propose that the stress contrast of (75) be accounted for by a rule feature, exactly as I proposed for the *carbine–boutique* contrast. As a matter of fact, I propose to use a feature on the same rule, the Alternating Stress Rule. That is, I propose that rule (20) above be reformulated as in (76):

(76) $V \rightarrow [1\ \text{stress}] / \text{---} C_0(=)\ C_0(VC_0)\ \overset{1}{V}\ C_0(i)\ \#$

This rule will not only retract stress in words whose final vowel bears main stress, but also in words that are stressed on the penult when these words end in /i/.[42] The forms in (75a) will be marked so that they will undergo rule (76), but those in (75b) and (75c) so that they will not undergo this rule.[43] Note that the traditional orthography uses the nonphonetic distinction between *i* and *y* in a way that roughly corresponds to this rule feature. Thus, words ending in graphic *i* are by and large [-ASR], while words ending in graphic *y* are generally [+ASR].

It is necessary to restrict the final vowel in (76) to /i/, for with words ending in other vowels, like /o/ and /æ/ (graphic *o* and *a*, respectively), no contrasts paralleling those in (75) can be found. That is, all words in *o*, like those in

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case (a)–case (c) would assign an incorrect 1–3 contour. Rather, it must be assumed to end in /+i/. However, such an ad hoc representation must cast further doubt on the claim that stress is retracted in such words as those in (75) only if they are morphologically complex. The same obtains for the obviously trimorphemic word *vigilante*. It must be assumed that this word also ends in /ti/, for, if it ended in /+y/, an incorrect 1–3 contour would be assigned by case (c).

[42]I have not adopted the device used in SPE of deriving some final [ĭy] sequences from an underlying glide /y/. The matter is a complex one, however, and I will defer discussion of it until §7.5.

[43]It will be noted that all the words in (75b) have an Italian "feel" to them. If a morphemic feature [+Italian] could be justified elsewhere in the grammar, which seems not implausible, it would be advantageous to state the following redundancy rule:

[+Italian] → [-ASR]

(77a), and in *a*, like those in (77b), keep main stress on their penults.[44]

(77) (a) *Monticello, armadillo, peccadillo, Amarillo, allegretto, pizzicato, cigarillo, Amontillado, mumbojumbo, desperado, Alamagordo*

(b) *Tuscaloosa, lollapalooza, Conestoga, Ticonderoga, Minnesota, sarsparilla, Texarkana, jacaranda*

Just as rule (20) had to be stated with parentheses in its environment, so that stress would be retracted in disyllables as well as in trisyllables, the revision of this rule, (76), must retain these parentheses, so that the stress contour of such words as *industry* can be derived. Chomsky and Halle propose the underlying representation /industr+y/, with the derivation shown in (78) (cf. p. 134):

(78)	Underlying form	$[\text{industr+y}]_N$
	MSR (aii)	1
	MSR (cii)	1 2
	[118d]	1 0
	Other rules	[ɪndəstriy]

Thus, stress retraction by case (c) is only possible because of the morphological analysis assumed for *industry*. Stress retraction in words like *malarkey* is prevented by assigning them an underlying representation like /mVlærkɪ/. Other words like *industry*, for which a morphemic analysis would be assumed in order to account for stress retraction, are given in (79a). The words in (79b) and (79c) would, like *malarkey*, be given no analysis.

(79) (a) *travesty, burgundy, organdy, frumenty, anchovy,*[45] *champerty, Gramercy (Park), tapestry,*

[44]The inevitable counterexample, in this case, is the word *rutabaga*, which some speakers pronounce with a 1–3 stress contour. Amazingly, I know of no counterexamples to the claim that words in *-o* never exhibit stress retraction.

[45]This word, when pronounced with an unreduced penult, must, like the words *autopsy* and *biopsy*, be marked as an exception to [118d].

lítùrgy,[46] *àllérgy*,[46] *cálúmny*, *Cóvéntry*, *Dóughérty*, *Ráfférty*, *Tímílty*, *léthárgy*, *Fláhérty*, *Píccárdy*, *Hággérty*

(b) *spúmóni*, *spághétti*, *Pírélli*, *Lómbárdi*, *zúcchíni*, *sálámi*, *bólógna*, *Róssíni*, *chíánti*, *Cámpári*, *Férrári*, *pástrámi*, *cónfétti*, *mártíni*

(c) *Bílóxi*, *Zámbézi*, *Kéntúcky*, *Mílwáukee*, *safári*, *cúráre*, *épóxy*, *Pérquáckey*, *Sewickley*, *attórney*, *górblímey*, *jálópy*, *Sándúsky*, *Maráthi*, *adóbe*, *tamále*, *Salóme*, *efféndi*, *cóyóte*, *Mahóney*

If the feature [+Italian] can be justified, the rule suggested in footnote 43 could be used to predict that stress will not be retracted in words like those in (79b), another fact that suggests that the rule retracting stress two syllables and the rule retracting it only one must be the same rule.

Again, it seems to me that the formal device of replacing rule features by arbitrarily inserted morpheme boundaries should not be countenanced on theoretical grounds. In the earliest generative treatment of English stress,[47] Chomsky, Halle, and Lukoff noted that absurd "simplifications" of the phonemic inventory would result if there were no constraints imposed on the location of word boundaries in underlying representations.[48] The constraint they suggested as necessary was that all junctures be syntactically justified. I view this constraint as the earliest attempt at formulating "naturalness conditions" on underlying representations, in the sense proposed by Postal. Although this constraint is probably too strong as it stands,[49] I think it is basically correct and should only be deviated from in extraordinary circumstances.

[46]As I argued above, in fn. 38, I see no reason why such forms as *allergic* and *liturgical* should constitute evidence for the existence of morphemes like /ælV̆rg/ and /litV̆rg/.

[47]Cf. Chomsky, Halle, and Lukoff (1956).

[48]The example they presented was from German, where there is a rule devoicing obstruents before word boundaries. Given this independently necessary rule, if word boundaries can be inserted freely in underlying representations, the contrast in voicing between *Bein* [bayn] 'leg' and *Pein* [payn] 'pain' could be accounted for by deriving the latter form from /b#ayn/.

[49]The well-worn example of *cranberry* is a case in point. Although I know of no syntactic evidence for it, the 1–3, instead of 1–0, stress contours of words ending in *-berry* (*raspberry*, *loganberry*, *huckleberry*, etc.) and the fact that there is no nasal assimilation in *cranberry* (Kenyon and Knott give [krænberi]) suggest that this form should be represented in the lexicon as /kræn#beri/, with a nonsyntactic interior word boundary.

[50]Morris Halle and I will take up this matter again, in a paper that is now in limbo.

Incidentally, it must not be thought that the Chomsky-Halle-Lukoff constraint can be restricted to higher-level junctures like word boundaries and that lesser junctures, such as morpheme boundaries, can be inserted with impunity. Imagine a hypothetical language in which proper nouns are stressed unpredictably on one of the last three syllables. That is, suppose the language exhibited such forms as those in (80):

(80)	(a)	(b)	(c)
	míwori	fakráyseks	pipapó
	stápenšap	yuhúha	wɔnhɔŋló
	húpdidu	pisɔ́vas	yihɔŋgúy

The following rule would "predict" the stress on these forms,

$$(81)\quad V \rightarrow [1\ \text{stress}] \,/\, \left[\ \overline{\quad}\ _{+\text{Proper}}\right] C_0(+VC_0(+VC_0))\ ]_N$$

assuming that the forms in (80c) were given no internal analysis, that the forms in (80b) were derived from /fakrays+eks/, /yuhu+ha/, and /pisɔv+as/, and that those in (80a) were all "trimorphemic"—that is, that they derived from /miw+or+i/, /stap+enš+ap/, and /hupd+id+u/. I take this "solution" to be as absurd as /b#ayn/, and I therefore cannot see any general way of exempting morpheme boundaries from the Chomsky-Halle-Lukoff constraint, although in particular cases it may be possible to argue for nonsyntactic morpheme boundaries. I also do not wish to convey the impression that I think this extraordinarily difficult question is closed—it is merely that to discuss it in the detail it deserves would go far beyond the bounds of the present study, so I will not pursue it here.[50] Since SPE accounts for the stress differences between (75a) and (75b,c) and between (79a) and (79b,c) by making use of ad hoc morpheme boundaries, I have rejected this analysis

in favor of one expanding the ASR, as in (76), and making use of rule features on this rule.[51]

It may be necessary to revise rule (76) again to account for the stress of the words in (82) and (83).

(82) (a) *intervàl* (cf. *intervàllic*)
(b) *Aristotle* (cf. *Aristotelian*)
pumpernickel

(83) (a) *ministər* (cf. *ministèrial*)
càlendər (cf. *càlendàrian*)
(b) *cauliflower*[52]
lammergeyer[53]
caterpillar

Paul Kiparsky has called to my attention that there is no way for SPE to derive the stress on the noun *filibuster*. If entered /filV̆bustr/, case (b) will produce *[fíləbʌstə]. If entered /filV̆bustV̆r/, case (b) and rule [120] will produce *[fíləbʌstə]. Only if C_0 is replaced by C_b can stress be properly assigned.[54] Given the first of the two underlying

[51]Noam Chomsky has pointed out to me that, although my contention may be true that it is not *only* words that have a morphemic analysis in which penultimate stress is retracted, it is the case that stress retraction does occur in (almost) all words that *are* morphologically complex. That is, words like **monarchy*, **orthodoxy*, **property*, and **loyalty* are impossible. Though I believe Chomsky's claim to be by and large a correct one (but cf. fn. 41), I propose to account for it by stating a redundancy rule on the rule feature [± ASR], making the ASR obligatory for words ending in /+i/ or /+ti/. It seems to me that this solution is theoretically preferable to one involving the insertion of ad hoc morpheme boundaries into the words of (75a) and (79a).

[52]This word must derive from /kɔlV̆flūV̆r/ and not from /kɔlV̆flūr/ for those dialects, like that of Kenyon and Knott, which can distinguish between *flower* ([flawə˞]) and *flour* ([flawr]), because *cauliflower* rhymes with the former word, not with the latter. Assuming that *flower* derives from /flūV̆r/, while *flour* derives simply from /flūr/, the 1–3 stress on /kɔlV̆flūV̆r/ could not be assigned by (76), the modified version of the ASR, or by any other rules in SPE, unless the word were treated as a compound, a solution having no independent support.

[53]A parallel to the discussion in fn. 52: for all dialects that pronounce *Meyer* as [mayə˞] but *mire* as [mayr], where *lammergeyer* rhymes with the former, it must presumably derive from /læmV̆rgīV̆r/.

[54]In line with my belief that the insertion of ad hoc morpheme boundaries (or ad hoc syntactic structure, for that matter) should be excluded on theoretical grounds by the Chomsky-Halle-Lukoff naturalness condition, I would regard as inadmissible proposals for accounting for the stress of *filibuster* that made use of such underlying representations as /filV̆bust+r/, which would yield the correct stress by case (a) and then case (c), or [filV̆[bustr]$_{stem}$]$_N$ or [[filV̆]$_N$[bustr]$_N$]$_N$, etc.

representations above, case (f) will assign final stress (since /str/ is not in C_b), and then the ASR, as formulated in SPE, could apply to assign initial stress. Only if there were independent motivation for assuming the second of the above underlying forms would the ASR need modification. Since I know of no such evidence in the case of *filibuster*, I have cited only the eight forms of (82) and (83), for which I believe it is possible to argue for final /V̆ $\begin{Bmatrix} r \\ l \end{Bmatrix}$/ sequences in underlying representation.

The word *caterpillar* cannot be accounted for at all, assuming the inadmissibility of such underlying structures as /kæ $\begin{bmatrix} tV̆rp \\ +D \end{bmatrix}$ ill+r/, which would be assigned the correct stress by case (a) followed by case (c), or [[kætr]$_N$[pilr]$_N$]$_N$, which could be stressed by the compound rule. If entered as /kætV̆rpillV̆r/, case (b) and rule [120] would produce an incorrect 3–1 stress contour. If entered as /kæterpilr/, case (b) would yield *[kætə˞pələ˞]. If entered /kætrpilr/, assuming that the first /r/ could somehow be syllabified by a non-ad hoc rule, case (b) would yield *[kætə˞pələ˞]. As far as I can see, no other reasonably natural underlying representation will work. The situation is parallel for *pumpernickel*.

Slightly more difficult problems arise with the word *Aristotle*. If entered as /æristɔttel/, case (b) and [120] would produce an incorrect 3–1 contour. If entered as /æristɔtel/, case (b) will produce *[ərístətl̩]. Even if it were entered in the totally unnatural form /æristɔtt+l/, which would require an ad hoc rule of *e*-insertion for the derivation of the adjective *Aristotelian*, the stress rules of SPE would not work. Case (a) would assign [1 stress] to the final vowel, but case (c) would then retract the stress only one syllable, yielding *[ərístətl̩]. The syllable /rist/ could not be automatically assigned the feature [+D]—as is done with the final syllables of the words *legend* and *moment*, so that case (c) will retract

the stress two syllables in *legendary* and *momentary* (cf. pp. 138–139)—because /rist/ does not end in a [-obs][+cns] sequence, as is required by the rule at the bottom of page 138. It would therefore be necessary to mark /rist/ lexically with the feature [+D]—as is done with /sign/, so that *designate*$_N$ can be derived (cf. p. 138, fn. 95)—as well as to create an ad hoc rule of *e*-insertion, in order for *Aristotle* to be derived from /æristɔtt+l/.

Admittedly, the forms in (82) and (83) are marginal, but they are easily accounted for if the ASR is modified one further time, so that it allows stress to retract when a final vowel is stressed, or when main stress is on a penult that is followed by the vowel /i/ or by any lax vowel and a liquid. This modification has been carried out in (84).

(84) $V \rightarrow [1\ \text{stress}] / \text{——}\ C_0(=)C_0(VC_0)\acute{V}C_0(\left\{\begin{matrix}\left\{\begin{matrix}i\\ \breve{V}\end{matrix}\right\}\\ \left\{\begin{matrix}r\\ l\end{matrix}\right\}\end{matrix}\right)\ \#$

With this modification, the forms *calendar* and *Aristotle* can be derived from the natural underlying forms /kælendær/[55] and /æristɔttel/, respectively:

(85) Underlying representation:	/kælendær/	/æristɔttel/
MSR—case (b)	1	1
ASR	1 2	1 2
SAR	1 3	1 3
[118]	1 0	
Vowel Reduction, etc.	[kæləndər]	[ærəstətl̩]

The other forms in (82) and (83) will be derived in a similar fashion. Of course, just as the forms in (18) and (20), as well as those in (75b,c) and in (79b,c), must be marked in such a way that the ASR will not apply to them, so the forms in (86b) must be marked [-ASR], in contrast with the [+ASR] forms in (86a).

(86) (a) *bannister* *haberdasher* *mollycoddle*
barrister *helicopter* *paradiddle*

[55]Note that though *calendar* must be considered to derive from an underlying trisyllabic form, so that *calendarian* can be derived, the form *calendrical* indicates the need for a rule that will drop the final vowel of this morpheme under certain conditions. This matter will be taken up again in §7.4.

carpenter *necromancer* *taradiddle*
harbinger *gerrymander*
messenger *alligator*
passenger *tamoshanter*
colander *alabaster*
cylinder *salamander*
derringer *poetaster*
sinister *knickerbocker*

(b) *semester* *Ebenezer* *apostle* (cf. *apostolic*)
sequester *Alexander* *epistle* (cf. *epistolary*)
philander *oleander* *skedaddle*
merganser *antimacassar* *evangel*
disaster *fandangle*
pomander *cathedral*
October (*December*, etc.)
remember
cadaver
palaver
decanter
trochanter
pilaster
chiaster

In addition, it will be necessary to restrict the ASR so that it never retracts stress before the adjectival affix *-al*: forms like **anecdotal*, **dialectal*, **maternal*, and **orchestral* must be prevented. This restriction can be accomplished by adding a branch containing [-next rule] to (84). I will defer this until the final statement of the ASR, in (88). A better solution will emerge in §7.1.

5.2. Now consider the stress contrast between *decameron* and *catamaran*. Given the underlying representations /dVkæmVrɔn/ and /kætVmVræn/, assigning of original final stress can be ensured by marking each [-case (b)]. Rule (84) will then correctly retract the stress on the first word, but if it is applied to the second, where stress has to be retracted three syllables, it will produce the incorrect *catamaran*. Note, however, that, while this particular word cannot be pronounced with this contour, such a pronunciation does not sound un-English in the least. Nor does the pronunciation *decameron*. Thus, I conclude that the ASR must be extended

one final time, to allow stress to be retracted three syllables for words like *catamaran*. In the unmarked case, the ASR will only retract the stress two syllables, in a quadrisyllabic word, but it will be possible to mark certain lexical items, like *catamaran* and the other words in (87), in such a way that the ASR will retract their stress three syllables.

(87) (a) *rázz(a)matázz* *rigamaróle*
thing(a)mabób *fótheringáy*
gobbledygóok *toreadór*
tacamahác
hobbledehóy

(b) *idiolect* (*ideográm*, *ideográph*, etc.)
heliotrope (*heliosc̀ope*, *heliográph*, etc.)
heteroclite (*heteronym*, *heterodox*, etc.)
helicosc̀ope (*helicográph*, etc.)
meteorite (*meteoroid*, etc.)

(c) *álienáte* *órientáte* *péregrináte*

(d) *detériorate* *améliorate*

(e) *véterinary* *héterodoxy* *dísciplinary*

These words illustrate a number of points:

a. Because of the two words in (87d), it is not possible to argue that the stress on the other words in (87) is assigned by a rule that, after case (f), merely assigns initial stress. Rather, the rule in question must be one that retracts stress three syllables.

b. Because of the words in (87a) and the verb *péregrináte*, the solution proposed in SPE for the words in (87c) and (87d)—which involves the assumption that when the retraction applies, the [i] in the antepenultimate is still a glide (cf. SPE, p. 277, fn. 56)—will not work.

c. If stress is to be retracted three syllables, the syllable immediately following the one that comes to bear main stress must end in a weak cluster. That is, words like **cátaspáran* do not seem to occur.[56]

d. The words in (87e) exhibit this stress retraction when the tertiary-stressed (phonetic) penult is followed by [ɪy], as was the case with the words in (75a). Thus,

[56] In §6.9 below, this fact will be shown to have an important consequence.

if rule (84) is extended to account for the words in (87a–d), the words in (87e) will also be automatically accounted for. Since rule (84) also allows a final /V $\begin{Bmatrix} r \\ l \end{Bmatrix}$/ to be disregarded, we should expect to find such examples as *árimostótle* and *filiabúster*, which would also correctly receive stress by an expanded rule (84). While I know of no actual cases with this stress contour (except for *whátsamajígger*, which can be handled a number of ways), they sound like possible English words, which again suggests that it is the ASR at work here.

In keeping with the above, I propose rule (88) as the final revision of the ASR.

(88) THE ALTERNATING STRESS RULE

$$V \rightarrow \left\{ \begin{array}{l} [\text{-next rule}] \,/\, \text{---}\ C_0\text{+æl \#} \\ [1\ \text{stress}] \end{array} \right\} \Big/ \text{---}\ C_0(=)C_0((\begin{bmatrix} V \\ \text{-tns} \end{bmatrix} C_0^1(\begin{Bmatrix} r \\ w \end{Bmatrix}))VC_0) \begin{bmatrix} V \\ 1\ \text{stress} \end{bmatrix} C_0(\left\{ \begin{array}{l} \begin{bmatrix} i \\ \text{-tns} \end{bmatrix} \\ \begin{bmatrix} \text{-cns} \\ \text{-tns} \end{bmatrix}\begin{bmatrix} \text{+cns} \\ \text{+voc} \end{bmatrix} \end{array} \right\})\#$$

I am aware that the words in (87b) and (87e) have an internal structure that is such that one might argue that they should be assigned their stress contours by case (c). I will go into this point in §6.4 below.

5.3. Consider now such words as the quadrisyllables in (89a) and the trisyllables in (89b).

(89) (a) *Ádirondáck* *Éniwetók* *Mássapequód* *cácoéthes* *Ágamémnon*

(b) *alóha* *Achílles* *Laértes* *Oréstes* *Ulýsses* *delícti*

Wyóming *Monádnock* *Penóbscot* *Hópatcong* (*neo*)*synéphrine*

By the rules given thus far, we would expect an underlying form like /ædirɔndæk/ to yield, by case (f) and the ASR, either *Adírondáck* or, if the trisyllabic retraction discussed in §5.2 were called for by some lexical mark, *Ádirondáck*. While neither of these pronunciations sounds hopeless, neither

accords with the standard pronunciation of this word. How then can the desired stress contour be derived?

I have noted above, in §2 and §5.1, that the ASR has many lexical exceptions. In its final form, (88), the rule applies in three main environments, which I have listed in (90).

(90) Case (3): $\longrightarrow C_0WVC_0\overset{1}{\breve{V}}C_0\left(\begin{Bmatrix} i \\ \breve{V} \end{Bmatrix}\begin{Bmatrix} r \\ l \end{Bmatrix}\right)\#$

Case (2): $\longrightarrow C_0VC_0\overset{1}{\breve{V}}C_0\left(\begin{Bmatrix} i \\ \breve{V} \end{Bmatrix}\begin{Bmatrix} r \\ l \end{Bmatrix}\right)\#$

Case (1): $\longrightarrow C_0\overset{1}{\breve{V}}C_0\left(\begin{Bmatrix} i \\ \breve{V} \end{Bmatrix}\begin{Bmatrix} r \\ l \end{Bmatrix}\right)\#$

In other words, the ASR retracts stress three syllables, two syllables, or one syllable. Assuming that all words to which case (3) applies will have to be marked, due to the rarity of such words as those in (87), we see that it would be possible to account for the stress contour on *Adirondack* merely by marking it [-case (2)] in the lexicon. We have already seen that the theory of grammar must provide some mechanism for blocking the application of subrules of a rule schema, for if *Oregon*, with a 1–3 stress contour, is to be generated, it must be marked [-case (b)] in the lexicon. I therefore see no theoretical reason for excluding the feature [-case (2)] from the lexical representations of the words in (89). Since all words will be marked [-case (3)] by a general redundancy rule, to which the words in (87) constitute exceptions, the word *Adirondack*, having received final stress by case (f), will not be able to undergo either case (3) or case (2) of the ASR, but will be able to undergo case (1). The derivation will proceed as follows:

(91)		
Lexical representation:	/ædVrɔndæk/	
	[-case (2)]	
Redundancy rule	[-case (3)]	
	/ædVrɔndæk/	
MSR—f		1
ASR—case (1)	1	2
Rule [120][57]	2 1	2
SAR	3 1	3

The stress contours on the other words in (89) would be derived in a similar fashion.

6. A Comparison of the Stressed Syllable Rule and the Alternating Stress Rule

6.1. As I have tried to show above, the addition of case (f) to the MSR leads to a number of changes in the other branches of this rule. Investigation of the question of when to stress a noun by case (b) and when by case (f) leads to replacing C_0 in the SPE version of case (b) with C_b (cf. §3). Establishment of C_b leads in turn to the realization that adjectives and nouns are stressed in basically the same way, which allows cases (a) and (b) to be collapsed (cf. §§4.1–4.2). Note that case (f) duplicates one of the functions of case (e)—that of assigning final stress. This fact, coupled with the observation that some verbs, like *jettison*, must be stressed by case (b), suggests that the other function of case (e), assigning stress to the penult, might be assumed by an existing rule. In §4.3, I have argued that in all cases where verbs that end in an obstruent have penultimate stress, an underlying final vowel must be postulated to account for the laxness of the stressed surface penult. This analysis thereby eliminates case (e) entirely: one half is subsumed by case (f), the other by case (b). The basic regularity concerning the initial assignment of primary stress in English is, therefore, I would argue, the one stated informally in (91):

(91) English words are stressed finally or nonfinally. With certain final consonant sequences, final stress is mandatory, but for other final consonant sequences, the choice of final vs. nonfinal stress is unpredictable. If stress is nonfinal, the stress is

[57] I cannot hear any difference in stress level between the first and the last syllables of *Adirondack*, so I have followed the convention suggested by Chomsky and Halle on pp. 118–119, whereby assigning [2 Stress] by rule [120] does not cause other lower stresses in a word to weaken. I will return to this convention in § 8.

assigned to the penult if it contains a heavy cluster, otherwise, to the antepenult.

In other words, primary stress is initially assigned either by case (b) or by case (f).

After the initial assignment of primary stress, however, primary stress can be retracted in one of two ways. Excluding the problem of assigning stress to such words as *mónosyllable*, to which I will return in §8, SPE asserts that stress assigned in the same cycle by case (eii) (= case (f)) is retracted two syllables by the ASR in words of three or more syllables, regardless of the phonological composition of the preceding syllable. In words stressed on a previous cycle by case (a), or by case (eii), or by rule [158], however, final stress is retracted one or two syllables, in accordance with the Romance Stress Rule. This second type of retraction is effected by the Stressed Syllable Rule, which I will refer to below merely as case (c).

In §2 above, I argued that the ASR must be reformulated so that it retracts stress one or two syllables (or even three, in exceptional cases—cf. §5.2). And in §5.1, I argued that the ASR must, in certain cases, be able to retract primary stress that had been initially assigned to the penult. Thus, the changes effected by case (c) and by the extended ASR are identical. What remains to be investigated is whether the rules must be ordered differently, that is, whether they apply in disjoint environments.

SPE makes use of case (c) for the following types of words:

(92) (a) *cárbine–mónsoon*
(b) *píccalilli–vérmicelli, índustry–spúmoni*
(c) $permit_V$–$pérmit_N$, $intercept_V$–$intércept_N$
(d) *bíplane–mónoplane, éngram–télegram*
(e) *stéreoscope–kaléidoscope*
(f) $delegate_V$–$délegate_N$
(g) $document_V$–$dócument_N$, $torment_V$–$tórment_N$
(h) *illustrate–illustrate, aggrandize–aggrándize, infantile–percentile*
(i) *advisory–promissory, confiscatory–anticipatory–classificatory, exemplary–urinary, mollusc–crystalloid*

I will take up each of these cases in turn below, arguing that only the last two provide evidence for case (c).

6.2. To start with, as I have argued in §2, the SPE analysis of the stress contrast in (92a)—which depends on adding rule [158] to the grammar and introducing morpheme boundaries into *carbine* and other words like those in (17), but not into *monsoon* or other words like those in (18)—has a number of defects. First, there are morphologically complex forms that do not undergo rule [158] and subsequent stress retraction by case (c) (e.g., *órnate, vérbose, súpreme, spittoon*, etc.). Second, this analysis must state as separate the fact that disyllables in /[-cns -tns] [+obs +voi -cont]/, /ɔf/, /ĩC_0/, and so on, must retract stress (by rule [158] and case (c)), as well as trisyllables ending in the same phonological sequences (by the ASR). Similarly, the fact that retraction is impossible under the same conditions for disyllables and trisyllables (e.g., for all forms ending in /õn/, /ēk/, /ēr/, /ēz/, etc.) must be stated twice. Third, this analysis requires an extra rule in the grammar, rule [158]. Worse yet, this rule duplicates exactly the function of an already existing rule, case (f) (equivalently, case (eii)), in that both assign final stress. Fourth, and most serious of all, in my estimation, the analysis violates the Chomsky-Halle-Lukoff naturalness condition on the use of junctures in phonology. All these difficulties can be avoided, however, if the ASR is extended to handle contrasts like those in (92a), which is the course I have followed.

The rules in SPE would account for the stress contrasts in (92b) by deriving these forms from the underlying representations /pikV̆lill+y/, /vermV̆čelli/, /industr+y/, and /spumõni/. The postulation of /+y/ affixes in *piccalilli* and *industry* and in the other words in (75a) and (79a) also constitutes a violation of the Chomsky-Halle-Lukoff condition, which is a serious enough defect. However, as I argued in §5.1 above, there are other facts that seem to indicate that the ASR must be stated in such a way that stress may be retracted from stressed final syllables, or from stressed penults, when these are followed by /i/ or /[-cons -tns] [+cons +voc]/. Without this extension, the stress contours on such words as *Aristotle, calendar*, and *cauliflower* cannot be accounted for unless bizarre underlying forms like [[ærV̆][stɔttel]], /kælen+dær/, and the like are resorted to. For these reasons, I have chosen to extend the ASR to account for the forms in (92b) also.

6.3. Forms like those in (92c)–(92g) are of particularly great theoretical interest because they have been advanced as evidence not only for case (c), but also for the necessity of allowing the transformational cycle to apply below the level of word boundaries. I will defer until §11 a discussion of all the evidence for the latter claim and restrict myself at present to a demonstration that the SPE account of the stress difference in (92c)–(92g) is not the only one possible.

For contrasts like those in (92c), Chomsky and Halle propose the following derivations:

(93) (a) Base form [per=mit]$_V$
MSR (eii) 1
Other rules [pə^{0}r mí^{1}t]

(b) Base form [[per=mit]$_V$]$_N$
MSR (eii) 1
MSR (cii) 1 2
SAR 1 3
Other rules [pə^{1}r mí^{3}t]

(94) (a) Base form [inter=kept]$_V$
MSR (eii) 1
ASR DNA
Rule [120] 2 1
SAR 3 1
Other rules [ín^{3}tə^{0}r sé^{1}pt]

(b) Base form [[inter=kept]$_V$]$_N$
MSR (eii) 1
ASR DNA
MSR (ci) 1 2
SAR 1 3
Other rules [ín^{1}tə^{0}r sé^{3}pt]

The ASR does not apply to retract stress for words like *intercept* because of the = boundary before the final syllable, as discussed by Chomsky and Halle in SPE, on pages 95–96. However, exactly the same effect can be achieved by adding a redundancy rule that states that stress does not retract in verbs and adjectives ending in $=C_0VC_0\#$.

The immediate objection to such a redundancy rule is that it is ad hoc and that to use such a redundancy rule is to give up an explanation of the stress contrast in (92c) that can be attained by an analysis making use of case (c) and

the transformational cycle. This objection can be countered, however. First of all, the redundancy rule blocking the ASR for verbs and adjectives ending in $=C_0VC_0\#$ can be made a branch of a redundancy rule that prevents stress retraction in disyllabic verbs and adjectives. This rule is stated in (95).

(95) $\begin{bmatrix} +\text{voc} \\ \begin{Bmatrix} +\text{V} \\ +\text{A} \end{Bmatrix} \end{bmatrix} \rightarrow [-\text{ASR}] \,/\, \begin{Bmatrix} \#C_0V \\ = \end{Bmatrix} \; C_0 \text{——} C_0 \; \#$ (a) (b)

Rule (95a) must be in the grammar in any event in order to account for the fact that the following constitutes an exhaustive list of disyllabic verbs and adjectives that undergo stress retraction.[58]

(96) (a) All adjectives in (61) and (62) and *pró^{1}lí^{3}x*
(b) All verbs in (52b) and *bó^{1}yco^{3}tt, á^{1}mbu^{3}sh, hí^{1}ghja^{3}ck, bú^{1}shwha^{3}ck, co^{1}mme^{3}nt, trí^{13}umph, wí^{1}gwa^{3}g, ée^{1}aves-dro^{3}p, clí^{1}ma^{3}x, dé^{1}luge, ú^{1}mpi^{3}re, hí^{1}cco^{3}ugh, sée^{1}sa^{3}w, vá^{1}cuu^{3}m, xé^{1}ro^{3}x, vé^{1}to^{3},[59] kí^{1}dna^{3}p, hó^{1}bno^{3}b*

The enormous lists of disyllabic verbs and adjectives that do not exhibit stress retraction, of which the examples in (57a) and (66) and those in SPE on page 69 (cf. [18 II, III]) and page 80 (cf. [42 II, III]) constitute only a small fraction, testify amply, I think, to the fact that (95a) expresses a significant

[58]I have not included in (96) many morphologically complex words. Other rules apply to these forms, which include the adjectives in *-ive*. I will argue (in §7.1) that all these have originally been finally stressed and have subsequently undergone stress retraction and a special rule of Destressing. Nor have I included verbs and adjectives in *-ate*, because for many of these the redundancy pointed out by Chomsky and Halle on p. 155 obtains. Nor have I included adjectives in *-oid*, such as *rhó^{1}mbo^{3}id*, which all undergo case (c), or verbs in *-ize*, such as *bá^{1}pti^{3}ze*, whose stress retraction will be discussed in §8. Adjectives in *-ine*, such as *fé^{1}li^{3}ne*, *cá^{1}ni^{3}ne*, etc., have also been excluded, since their stress retraction follows from the fact that all words in $/\bar{\text{I}}C_0/$ undergo the ASR, as was pointed out above, in connection with the words in (28).

[59]Following a suggestion made to me by Paul Kiparsky, I propose to account for the *vé^{1}to*–*mó^{1}tto^{0}* contrast (cf. pp. 190–191) by entering *veto* as $/\text{v}\bar{\text{e}}\text{t}\bar{\text{o}}/$ and *motto* as /mɔtto/. Case (f) will assign final stress to *veto*, $^{+\text{ASR}}$ and the ASR will retract the stress. This proposal allows rule [45] on p. 191 of SPE to be dispensed with.

generalization and should be included in the grammar. Clearly, adding (95b) to (95a) to account for the nonretraction of stress in words like *intercept*$_V$ and *comprehend* (and, incidentally, in such words as *permit*$_V$, *import*$_V$, etc., which do not undergo stress retraction because they are disyllabic and because they contain the boundary =) complicates the grammar in only a minor way. I will show below, however, in §6.5, that even this minor complication can be avoided when (95b) is made part of rule (107).

The other objection to (95b), namely, that it misses an explanation of the contrasts in (92c), an explanation that the analysis in SPE can provide, is wrong in a deeper way. That is, I cannot see that the rules in SPE have explained the following observation, which is due to Paul Kiparsky,[60] and which I take to be a very deep fact about English:

(97) If verbs or adjectives that are homophonous with nouns differ from the noun in the location of primary stress, this stress is never to the right of the primary stress of the noun.[61]

Thus, (97) rules out as impossible such noun-verb pairs as *$\acute{\text{i}}\text{mp}\grave{\text{o}}\text{rt}_N$–$\acute{\text{i}}\text{mp}\grave{\text{o}}\text{rt}_V$, *$\acute{\text{p}}\text{o}\grave{\text{l}}\text{ice}_N$–$\acute{\text{p}}\text{o}\grave{\text{l}}\text{ice}_V$, and so on, or such noun-adjective pairs as *$\acute{\text{e}}\text{xtr}\grave{\text{e}}\text{me}_N$–$\acute{\text{e}}\text{xtr}\grave{\text{e}}\text{me}_A$, *$\acute{\text{d}}\text{ivine}_N$–$\acute{\text{d}}\text{iv}\grave{\text{i}}\text{ne}_A$, and so on.

How could the rules of SPE exclude the first of these pairs? Observe that if the base forms shown in (98a) are possible base forms, the derivations shown in (98b) will produce the unacceptable result that (97) excludes.

(98)			
(a)		$[\text{im=port}]_N$	$[[\text{im=port}]_N]_V$
(b)	MSR (eii)	1	1
	MSR (cii)		1 2
	SAR		1 3
		$[\text{imp}\grave{\text{o}}\text{rt}]$	*$[\acute{\text{i}}\text{mp}\grave{\text{o}}\text{rt}]$

[60]Personal communication.

[61]The only counterexample I know of, although I am not sure any such dialect exists, would be a dialect that exhibited only *$\acute{\text{d}}\text{efense}_N$* and *$\grave{\text{d}}\acute{\text{e}}\text{fense}_V$* (as in football). I am not sure, but I think that in my speech the noun can be pronounced with or without stress retraction, while the verb is more natural with stress retraction, though it does not seem impossible without retraction.

The only way I can see to avoid (98), within the framework of SPE, would be to state ad hoc that (98a) contains inadmissible base forms, in particular, that $[[X]_N]_V$ and $[[X]_N]_A$ are inadmissible surface structures. But such a claim seems to me to be far too strong, at least insofar as the bracketing $[[X]_V]_N$ is to represent the intuition that such nouns as those in (99) are deverbal and deadjectival, that is, that the homophonous verb or adjective "feels," in some at present totally mysterious way, more basic than the homophonous noun.

(99) (a) *transfer*, *sneeze*, *spring*, *construct*, *walk*, *sleep*, *snore*, *wait*, *move*, *repair*, etc.

(b) *extreme*, *divine*, *remote*, *modern*, *particular*, *partial*, *harmonic*, *elective*, etc.

Note that, in order to prevent the derivation of 1–3 stress contours on any nouns in (99b), lexical items like *extreme*, *divine*, and *remote* could be marked [-case (c)] in the lexicon.

However, just as some nouns "feel" deverbal, some verbs "feel" denominal. A selection is given in (100).

(100) *to police*, *to snag*, *to stone*, *to pattern*, *to voice*, *to machine*, *to shellac*, *to fool*, *to boot*, *to package*, *to balloon*, etc.

The question that now arises is the following: if a base form like $[[\text{kɔn=strukt}]_V]_N$ is allowable as a formal representation of the fact that *a construct* is felt to be less basic than *to construct*, why is the base form $[[\text{pɔ̄lēs}]_N]_V$ not admissible as a representation of the fact that *to police* is felt to be less basic than the noun *police*?[62] And if it is allowable, what stops the derivation in (101)?

(101)	
	$[[\text{pɔ̄lēs}]_N]_V$
MSR (eii)	1
MSR (dii)	1 2
SAR	1 3
Other rules	*$[\acute{\text{p}}\text{ōwl}\grave{\text{ī}}\text{ys}]$

To be sure, it would be possible to mark *police* as [-case

[62]I am not interested at present in whether the noun or the verb of a given pair is felt to be more basic. As far as I know, all speakers have some feeling about whether certain words belong in (99) or (100), and the point I am concerned with here does not depend on the particular examples I have used.

(c)], as is necessary with *extreme* and *remote*, but to do this is to miss the real generalization expressed in (97). (97) states that *no* words (but cf. fn. 61) will be of the form $*pol\grave{i}ce_N$–$p\grave{o}l\acute{i}ce_V$. Clearly, to mark *police*, *shellac*, and *machine* as being [-case (c)] is not to provide an explanation for (97). Nor, in fact, would (97) be explained, even if some redundancy rule could be formulated that automatically assigned [-case (c)] to structures of the form $[[X]_N]_V$.[63] The question would merely be pushed back to the question of why such a redundancy rule should exist.

If rule (95a) is in the grammar, a formal explanation of (97) can be achieved, a fact that constitutes evidence of the strongest kind for the correctness of rule (95). I will defer, until §6.7, where I discuss the contrast between $t\grave{o}rm\acute{e}nt_V$ and $t\grave{o}rm\acute{e}nt_N$, a presentation of my proposed explanation. Here I would merely like to point out that (97) must, in any adequate theory of grammar, be related to the fact that C_b for nouns is a superset of C_b for adjectives and C_b for verbs. Thus, there are more *types* of nouns that can have penultimate or antepenultimate stress than there are types of adjectives or verbs that can be stressed in this way. The larger regularity, which includes both this fact about the assignment of primary stress by the MSR and Kiparsky's observation about stress retraction, is that nouns tend to exhibit primary stress on earlier syllables of a word than adjectives or verbs. The theoretical consequences of this broader fact will be discussed in some detail in §9.[64]

6.4. Let us turn now to the contrasts in (92d), which Chomsky and Halle propose to account for as in (102).

(102)

(a)	Base form	$[bī[plān]_S]_N$		$[mɔnɔ[plān]_S]_N$
(b)	MSR (eii)	1	MSR (eii)	1
	MSR (cii)	1 2	MSR (ci)	1 2
	SAR	1 3	SAR	1 3
	Other rules	$[\grave{b}\bar{a}y\acute{p}l\bar{e}yn]$	Other rules	$[\grave{m}\bar{a}n\ə\acute{p}l\bar{e}yn]$

[63]Such a redundancy rule would be too strong in any case, as the noun $d\grave{e}t\acute{o}ur_N$ and the denominal verb $[[d\grave{e}t\acute{o}ur]_N]_V$ show. The point is not that denominal verbs (or adjectives) cannot retract stress, but that stress can only be retracted in the verb (or adjective) *if it also is in the noun.* This fact cannot be accounted for in the SPE analysis.

[64]Cf. also Ross (1971).

We see that these forms can also be handled without case (c) and without having to assume two passes through cyclical rules. If *biplane* and *monoplane* are entered as /bi+plān/ and /mɔnɔ+plān/, respectively, case (f) will assign final stress, and the ASR and SAR will produce the desired 1–3 stress contours. The same is true for *engram* and *telegram*. If these are entered as /en+græm/ and /tele+græm/, respectively, the same sequence of rules can be used to derive the desired stress contours. Thus, neither pair provides evidence for case (c) or for the cycle. The kind of word that would provide conclusive proof that case (c) is necessary for the contrasts in (92d) would be a word like $b\grave{e}l\acute{o}wpl\acute{a}ne$ or $ins\grave{e}ct$-$pl\acute{a}ne$, where the stress would only be retracted one syllable, to the strong penult. However, such words do not exist. All words that end in such stems as *-phone*, *-graph*, *-photo*, *-plasm*, *-chrome*, *-tome*, and so forth can only be preceded by prefixes that end in a weak cluster, such as *bio-*, *tele-*, *phono-*, *photo-*, *endo-*, and *zygo-*; and stress can be retracted to the initial syllable of such prefixes equally well by case (3) of the ASR or by case (ci). I will discuss the status of such trisyllabic prefixes as *stereo-*, *audio-*, and *hetero-* in §6.5 below.

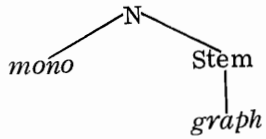
Note that it is only case (f) that makes it possible to derive the stress for such words as *engram* and *telegram* without having recourse to case (c), for the rules of SPE could only stress such underlying forms as /en+græm/ and /tele+græm/ by case (b), which would produce the incorrect results $*[\grave{e}ngr\ə m]$ and $*[t\grave{e}l\ə gr\ə m]$. But an MSR that includes case (f) can produce the correct 1–3 contours by lexically marking the morpheme *gram* [-case (b)], just as the morpheme *Siam* will be marked.

However, there is a point being overlooked here that is captured in the analysis of SPE. No word composed of a prefix followed by a monosyllabic stem can be stressed by case (b),[65] even if the stem ends in C_b. This statement is true both of Greek stems like *-gram*, *-crat*, and so on, and also of Latin stems like *-mit* and *-cuss*. That is, such pronunciations as $*d\grave{e}moc\acute{r}at$, $*\grave{i}sob\acute{a}r$, $*p\grave{e}rm\acute{i}t$, and $*d\grave{i}sc\acute{u}ss$ are

[65]The restriction to monosyllables is necessary because of such words as $t\grave{e}leph\acute{o}to$ and $t\grave{e}trah\acute{e}dron$.

impossible.[66] Chomsky and Halle account for this fact by postulating such surface structures as the one shown in (103) (cf. SPE, p. 100, paragraph 2),

(103)



and by mentioning the category S(=Stem) in the statement of the MSR, thus ensuring that [1 stress] will be assigned to *graph* on the first cycle. However, there is no *syntactic* justification for such a phrase structure category as Stem. Since no transformational rule refers to this category, this solution cannot be considered adequate.

I do not dispute the fact that the morphemes in the lexicon must be segregated into a large number of combinatorial classes, since only certain sequences of such morpheme classes are possible words. That is, although *autocyclophonistic* is a possible English word, the same sequence of morphemes in reverse order, or pairwise permuted, is not. Such facts should be accounted for by including in the lexicon a set of *word-formation rules*. This idea is by no means novel, although the problem of accounting for the set of possible morpheme sequences has been largely ignored in previous work on generative grammar.[67] I would imagine that the class of stems—e.g., such words as *-graph*, *-hedron*, *-cycle*, *-mit*, *-ceive*, *-cuss*, and so forth, which play no role in the syntax of English, to the best of my knowledge—will play an important part in the eventual set of word-formation rules for English. Let us assume, for the sake of discussion, that the word-formation rules will refer, among other things, to word-formation features like [+Stem]. These features will be listed in the lexicon proper in the entries of such morphemes as *-graph* and *-hedron*. I would propose that the fact that there

[66]Jay Keyser has pointed out to me that there are exceptions to this generalization, especially in British English. Thus, the pronunciations *prógram*, *díagram*, *Péntagon*, etc., are not uncommon, even though 1–3 contours are also possible. I propose that such forms be lexically marked as exceptions to redundancy rule (107). This point is developed below.

[67]Halle and I will present some preliminary speculations about such word-formation rules in the paper mentioned in fn. 50 above.

are no such words as **dèmocrát* (but cf. fn. 66) be captured not by writing rules that will necessitate ad hoc surface structures like (103), but rather by assuming the existence of a redundancy rule like (104).

$$(104)\quad \begin{bmatrix} V \\ +\text{Stem} \end{bmatrix} \rightarrow \begin{bmatrix} \text{-case (b)} \\ +\text{ASR}^{68} \end{bmatrix} \;/\; +C_0 \text{ —— } C_0\ \#$$

This rule only affects monosyllabic stems, for stems like *-photo* and *-hedron* must be stressed by case (b). Note also that it is necessary to specify that all words consisting of prefix and stem not only undergo case (f) but also exhibit stress retraction, for such words as **bíplàne* and **Kòdachrómе* are impossible. This fact about retraction would have to be stated in the SPE analysis as well, since it must be possible to mark lexical entries [-case (c)], as the discussion in §6.7 below, dealing with the stress of the word *lament*, shows. Some way must be found to ensure that prefix-stem words like *monoplane* can never be marked [-case (c)]; otherwise the undesired **mònoplàne* would result. Thus, something corresponding to rule (104) would have to appear in the set of redundancy rules for SPE also.

Recall that in §6.3 above, I proposed that a branch be added to rule (95a) to block the ASR from retracting stress in such verbs as *permítV* and *intercéptV*. The device used followed closely the analysis suggested in SPE, pages 95–96, which depended on whether the ASR could retract stress from a syllable preceded by the boundary =. However, the resulting rule, (95b), resembles rule (104), in that both specify conditions under which words that end in stems undergo stress retraction.

This similarity can easily be exploited. Obviously, any adequate set of word-formation rules for English will have to separate stems and prefixes into at least two classes, as shown in (105) and (106).

(105) (a) *ab-*, *ad-*, *con-*, *contra-*, *de-*, *in-*, *inter-*, *per-*, *pro-*, *re-*, *sub-*, *trans-*, *omni-*, *equi-*, *ambi-*, etc.

[68]The exact interpretation of the feature [+ASR], when on the right side of the arrow of a redundancy rule, will be discussed in § 10. Roughly, it can be thought of as a formal device that ensures the application of the ASR if its environment is met.

(b) *-cuss, -ceive, -cide, -cede, -tain, -pose, -mit, -gress, -pend, -spect, -late, -fer, -rode, -here,* etc.

(106) (a) *bio-, psycho-, mono-, iso-, hexa-, cata-, para-, physio-, tele-, syn-, proto-,* etc.

(b) *-phone, -graph, -gram, -gon, -spore, -tome, -log, -phage, -hedron, -plasm,* etc.

Roughly, any prefix in (105a) can be followed by any stem in (105b), or any prefix in (106a) by any stem in (106b), and a possible English word will result. However, no words can be formed if one part is from (105) and the other from (106). To account for this fact, some feature will be necessary. Let us therefore, in accordance with etymology, assign to the morphemes in (106) the ad hoc feature [+Greek].

Reconsidering the words that rules (95b) and (104) must account for, we see that in [+Greek] prefix-stem words, stress is always retracted, in both nouns and verbs. Some examples are $\overset{1}{t}\grave{e}l\overset{3}{e}ph\overset{1}{o}ne_{NV}$, $\overset{1}{t}\grave{e}l\overset{3}{e}sc\overset{1}{o}pe_{NV}$, $\overset{1}{c}\grave{a}t\overset{3}{a}l\overset{1}{o}g_{NV}$, and $\overset{1}{p}\grave{a}ra\text{-}ph\overset{3}{r}\grave{a}se_{NV}$. However, in [-Greek] words, stress is only retracted in nouns.[69] These facts can be accounted for by reformulating (104) as (107):

$$(107)\quad \begin{bmatrix} V \\ +Stem \end{bmatrix} \rightarrow \begin{bmatrix} -case\ (b) \\ \langle +ASR \rangle \end{bmatrix} / +C_0 \left[\left\langle \left\{ \begin{matrix} +N \\ +Greek \end{matrix} \right\} \right\rangle \right] C_0\ \#$$

[69]This statement is not quite accurate, in a way that I do not see at present how to remedy. Consider, for instance, the word *abstract*. With a 3–1 (or 0–1) contour it can be an adjective meaning "not concrete," or a verb meaning "to remove, or steal, from." With a 1–3 contour, it can be a noun with the meaning "précis, condensation, summary," or *it can be a verb*, with the meaning "to construct an abstract for or of" (as in *This journal sure did a rotten job in abstracting my paper.*). Other examples are *to* $\overset{1}{i}nterc\overset{3}{e}pt_V$ ("give the intercepts of"), *to* $\overset{1}{p}\grave{e}rm\overset{3}{i}t_V$ ("provide with a permit"), *to* $\overset{1}{r}\grave{e}j\overset{3}{e}ct_V$ ("mark as a reject"), etc. These examples, which all "feel" strongly denominal, seem to suggest that rather than notations like $[[\ ]_N]_V$ and $[[\ ]_V]_N$, what may be necessary is a notation $[\ ]_{[N,V]}$, where the node subscripts form an unordered set, and where some rule or convention will stipulate that the symbol N predominates. If a subscript set contains N, the word with such a subscript set will undergo rules referring to nouns, *even though it may be functioning syntactically as a verb.* I realize, of course, that it is far too early to propose this or any other formal solution with any confidence, so the above should be regarded as speculation.

This rule looks terribly ad hoc until it is compared with the theoretical machinery that SPE uses to achieve the same effect. First, instead of the ad hoc word-formation feature [+Stem], SPE makes use of ad hoc surface structures like (103) and of the boundary =. (I will argue in §7.2, in connection with the rule of *Medial Laxing*, that this boundary is not only unnecessary, but that it also actually makes it impossible to derive the stress contours of such words as $\overset{1}{p}r\grave{e}sid\overset{0}{e}nt$ and thus must be dispensed with in favor of the feature configuration [+Stem -Greek] or possibly [+Stem +Latin].)

Second, while it is indeed ad hoc to mention the feature [+N] in the environment of (107), there is no non-ad hoc way for derivations such as that in (101) to be blocked within the framework of SPE. That is, within the SPE framework, allowing nouns to be derived from verbs by an additional pass through the cycle, but not allowing verbs to be derived from nouns in a parallel fashion, is an ad hoc restriction on underlying forms that corresponds exactly to my mentioning [+N] in the environment of (107).

Finally, mentioning the feature [+Greek] in (107) is ad hoc, but no more so than postulating the structures shown in (108) in place of any of those shown in (109).

(108) $[tele\ [f\bar{o}n]_S]_{N\,V}$ $[inter{=}kept]_V$ $[[inter{=}kept]_V]_N$

(109) (a) $[tele\ [f\bar{o}n]_S]_{N\,V}$ $[inter\ [kept]_S]_{N\,V}$

(b) $[tele{=}f\bar{o}n]_N$ $[[tele{=}f\bar{o}n]_N]_V$ $[inter{=}kept]_V$ $[[inter{=}kept]_V]_N$

(c) $[tele{=}f\bar{o}n]_N$ $[[tele{=}f\bar{o}n]_N]_V$ $[inter[kept]_S]_{NV}$

The underlying representations in (109a) will yield 1–3 contours on both the nouns and the verbs. The representations in (109b) will yield 3–1 contours on the noun $telephone_N$ and on the verb $intercept_V$, and 1–3 contours on the verb $telephone_V$ and the noun $intercept_N$. The representations in (109c) will yield a 1–3 contour on both variants of *intercept* and on the verb $telephone_V$, but a 3–1 contour on the noun $telephone_N$. Obviously, it would be easy to increase the number of underlying representations in (109), which will yield even more unattested types of alternation. Of course, I do not dispute that the representations given in (108) will yield the desired

output, given the rules in SPE. My point is merely that there is no independent motivation, from the syntax or from any other part of the grammar, for choosing any one of these representations over any other. After all, if there can be a stress cycle on *-phone*, why can there not be one on *-cept*? Thus, the choice of the representations in (108), instead of any of those in (109), is ad hoc—just as the use of the feature [+Greek] in the environment of (107) is.

In fact, it seems that although the stress contours of prefix-stem words are completely predictable, given the knowledge of whether or not the word is [+Greek] and of what its syntactic category is, the particular *content* of the stress contour (that is, whether the final syllable is stressed and whether retraction applies) is completely random and unrelated to other facts about English stress contours. The predictability of stress in prefix-stem words is a particular fact and is not related to other, more general, rules of stress.[70] Therefore, I can see no reason to prefer the SPE analysis, which makes use of ad hoc representations like those in (103) and (108), over my rule (107), which connects the MSR and the ASR in an ad hoc way to the features [+Stem], [+Greek], and [+N].[71]

There is one difference, however, between rule (107) and the analysis in SPE that seems, despite the ad hocness of both, to clearly motivate choosing the former over the latter. If the noun $\overset{1}{intercept}_N$ is to be derived from the verb by an extra pass through the cycle, what is to prevent the verb $\overset{1}{tel}\overset{3}{ephone}_V$ from being derived in a parallel fashion from the noun $\overset{1}{tel}\overset{3}{ephone}_N$? If this is allowed, such incorrect derivations as that in (110) will result.

(110)

Base form:	$[[\text{tele}[\text{f}\bar{\text{o}}\text{n}]_S]_N]_V$
MSR (eii)	1
MSR (ci)	1 2
MSR (ci)	1 3
SAR	1 4
Other rules	$*[\overset{1}{\text{t}}\text{e}\overset{0}{\text{l}}\text{ə}\overset{0}{\text{f}}\text{ən}]$

[70]This claim is somewhat too strong. That the environment of rule (107) contains the feature [+N] is related to a more general phenomenon, which will be discussed in § 9.

[71]One disturbing feature of rule (107) does require comment, namely, the fact that its environment essentially repeats the environment of case (f). I have not been able to find a way to remedy this obvious defect.

The reason that the vowel of the last syllable of the derived member of the noun-verb pair *telephone* will undergo Vowel Reduction is discussed by Chomsky and Halle on page 107, in connection with the noun $\overset{1}{del}\overset{0}{egate}_N$. (Obviously, the incorrect derivation in (110) would not be affected if the noun *telephone* were assumed to be deverbal.) I will discuss the SPE analysis of this word in detail in §6.6. Here, suffice it to say that, unless the underlying representation in (110) is ruled out on some ad hoc basis, the analysis in SPE will produce an incorrect 1–0 contour on the derived member of the noun-verb pair for *telephone*. Again, let me emphasize that this difficulty cannot be satisfactorily sidestepped by disallowing underlying representations of the form $[[X]_N]_V$, which would, however, have the correct results, in that it would prevent (98), (101), and (110). The question would still have to be faced as to why $[[X]_V]_N$ representations *are* admissible, if $[[X]_N]_V$ representations are not. Until that question had been given a satisfactory answer, it could not be claimed that the stress contrast between $\overset{3}{inter}\overset{1}{cept}_V$ and $\overset{1}{inter}\overset{3}{cept}_N$ had been *explained*—since the proposed account would depend on the ad hoc prohibition of one of two kinds of underlying representation, each of which seems equally well motivated, syntactically or intuitively.

Note that if cyclical rules are prohibited from applying below the level of word boundaries, the difficulty occasioned by the incorrectness of the form $*\overset{1}{tel}\overset{0}{ephone}_V$ vanishes. Both the noun and the verb forms of *telephone* can be derived as in (111).

(111)

Base form:	/tele+fōn/
	[+Greek, +Stem]
Rule (107)	[-case (b), +ASR]
MSR (f)	1
ASR	1 2
SAR	1 3
Other rules	$[\overset{1}{\text{t}}\text{e}\overset{3}{\text{l}}\text{ə}\text{f}\bar{\text{o}}\text{wn}]$

I conclude, therefore, not only that the stress contrasts in (92d) cannot be taken to provide evidence for case (c) and for the cycle, but also that the impossibility of excluding $*\overset{1}{tele}\overset{0}{phone}_V$, on a principled basis, actually argues against allowing

cyclically ordered rules to apply below the level at which word boundaries are reached in English.

6.5. Let us turn now to the contrast shown in (92e), *stèreoscópe–kaleìdoscópe*, which SPE accounts for as in (112), using case (c) and the transformational cycle.

(112)

(a) Base form	[stere+ɔ[skɔ̄p]$_S$]$_N$			(b)	[kVlīd+ɔ[skɔ̄p]$_S$]$_N$		
MSR (eii)		1					1
MSR (ci)	1	2		MSR (cii)		1	2
SAR	1	3				1	3
Other rules	[stèrīyəskó̄wp]				[kəlā̀ydəskō̄wp]		

Recall that there is a rule, the ASR, which has the function of retracting stress one, two, or three syllables, that we could make use of to derive the stress on *stèreoscópe*. However, whereas the ASR does not normally retract stress three syllables, trisyllabic retraction is mandatory for all words consisting of a prefix plus a stem when the prefix is any one of those in (113).

(113) *stereo-*, *idio-*, *helio-*, *entero-*, *hetero-*, *helico-*, *hagio-*, *sidero-*, *biblio-*, *physio-*, *cinema-*, *cardio-*, *radio-*, *utero-*, *dolicho-*, *polio-*, *(en)cephalo-*, *audio-*, etc.[72]

On the other hand, disyllabic retraction is mandatory for the prefixes in (114), as such words as *tònsìlloscópe* and *daguèrrotýpe* indicate.

(114) *galvano-*, *oscillo-*, *polari-*, *tonsillo-*, *pupillo-*, *spinthari-*, *praxino-*, *daguerro-*, *chromato-*, etc.

Note that both these sets of words have penultimate syllables that end (phonetically) in weak clusters, unless the relevant syllable precedes a vowel, in which case the Tensing

[72]It is perhaps worth noting that almost all these prefixes end in the subsequence $\breve{V}$[-obs]$\breve{V}$, and that most of the words in (87) also have subsequences of this form following primary stress. This is possibly of significance, since $\breve{V}$[-obs]$_0^1\breve{V}$ is exactly the type of two-vowel subsequence that can be used to fill a W position in Chaucer's iambic meter, as has been pointed out by Halle and Keyser (1967). And, as Chomsky and Halle observe (p. 78), "[The ASR] produces alternations of stressed and unstressed vowels. It is thus one of the factors contributing to the frequently observed predominance of iambic rhythms in English."

Rule applies (as in *stereo-*, *radio-*, etc.). Therefore, it is not clear how it can be claimed that stress retraction is governed by the principle of the RSR. Chomsky and Halle consider these forms on page 104, in footnote 56, where they again suggest inserting an ad hoc morpheme boundary in the forms of (113), but not in those of (114). They formulate case (c) in such a way that the "morpheme" /+ɔ+/ can be disregarded along with the final stressed syllable, when stress is retracted by this case. As I have argued above, I can see no difference between such a solution and the one for the *Bein–Pein* contrast, which Chomsky, Halle, and Lukoff rejected, and I think correctly so, in 1956. Both solutions are equally suspect, and a theory that excludes on a principled basis representations like /bayn/ versus /b#ayn/ must also exclude ones like /stere+ɔ+skɔ̄p/ versus /tɔnsilɔ+skɔ̄p/. The last of these representations is especially suspect, in light of the existence of the word *tonsil*, which clearly indicates that there must be a morpheme /+ɔ+/ in *tònsìlloscópe*. Nor is a second analysis, mentioned in footnote 56 by Chomsky and Halle, possible, namely, the device of entering the prefixes in (114) in the lexicon with geminate consonants. While such an ad hoc representation can be made to work for a representation like /tɔnsill/, that is, for an MSR whose environment for case (b) ends in C_0, it cannot be made to work if C_0 is replaced by C_b, as I have argued is necessary. /ll/ is not in C_b, and the underlying representation /tɔnsill/ could only be stressed by case (f), yielding, eventually, **tònsíl* or **tònsìl*, instead of the desired *tònsìl*, depending on whether stress retraction occurs. Nor is the third possibility entertained by Chomsky and Halle, in footnote 95 on page 138, viable. There they suggest marking the final vowel of the words in (113), though not of those in (114), with the feature [+D], which case (c) is formulated to disregard. This solution, however, will entail postulating two otherwise identical "morphemes," which differ only in the marking on the feature [+D]. In words like *hèlicoscópe*, the morpheme $/^{+ɔ+}_{+D}/$ would appear (cf. *helix*), whereas in *tònsìlloscópe* the plain morpheme /+ɔ+/ would appear. This solution also seems intolerable to me.

I see no reason to register the fact that stress retraction onto such prefixes as those in (113) and (114) is unpredictable elsewhere than on the retraction rule itself. All the facts will

be accounted for if the prefixes in (113) are marked minus for the general redundancy rule, (115), which specifies that all words are [-case (3)] of the ASR.

(115) [ ] → [-case (3)]

Stress will be retracted three syllables when the ASR applies to words beginning with one of these prefixes, or when it applies to the monomorphemic words in (87a), which are also [-115] (since case (3) of this rule becomes applicable first, being the longest of the set of three disjunctively ordered rules). That is, the derivation of *stèreoscŏpe* would proceed as shown in (116).

(116)	Base form	/steriV̆+skōp/ [-115]
	Rule (115)	DNA
	MSR (f)	1
	ASR	1 2
	SAR	1 3
	Other rules	[stèrīyəskŏwp]

Note that in this analysis, it is not possible for stress to be wrongly retracted three syllables, that is, onto the first syllable of such words as those in (117).

(117) *kaleido-*, *laryngo-*, *ophthalmo-*, *galacto-*, *phena-kisto-*, *dipleido-*, *phonendo-*, *urethro-*, etc.

To see this, recall that (90a) shows that the syllable immediately to the right of the one to which case (3) of the ASR retracts stress must end in a weak cluster. Because of the non-existence of such monomorphemic words as **càtəspərən*, even if we were to mark a prefix like *kaleido-* or *laryngo-* with the feature [-115], the ASR could only retract stress two syllables, because of the way case (3) of the ASR must be stated. Thus, the derivation of *kalèidoscŏpe* could only proceed as follows:

(118)	Base form	/kV̆līdV+skōp/ [-115]
	Rule (115)	DNA
	MSR (f)	1
	ASR case (3)	DNA
	ASR case (2)	1 2
	SAR	1 3
	Other rules	[kəlāydəskŏwp]

I conclude that contrasts like those in (92e) cannot be used in support of derivations like those in (116), which involve case (c) and the cycle. On the one hand, contrasts like those between the stress-retraction phenomena exhibited by the prefixes in (113) as opposed to those in (114) cannot be accounted for in such an analysis without violating the Chomsky-Halle-Lukoff naturalness condition; on the other hand, the fact that such prefixes as those in (117) never retract stress three syllables is a natural consequence of the way case (3) of the ASR must, on independent grounds, be formulated. Therefore, it seems perfectly natural to account for the contrasts in retraction shown in (92e) by means of the ASR.

6.6. Let us now turn to such pairs as those in (92f), *dèlegāte*$_V$–*dèlegŏte*$_N$, which Chomsky and Halle derive as in (119) (cf. p. 107).

(119)	Base forms	$[\text{delV̆gæt}]_V$	$[[\text{delV̆gæt}]_V]_N$
	MSR (eii)	1	1
	ASR	1 2	1 2
	MSR (di)		1 3
	ASR		DNA
	SAR	1 3	1 4
	Other rules	[dèləgēyt]	[dèləgət]

That is, Chomsky and Halle predicate the reduction of the final vowel of *dèlegŏte*$_N$ upon the deverbal "feel" of this noun, requiring it, therefore, to go through the cycle of stress rules one more time than the more primary verb. The rules, in particular case (c), are formulated in such a way that this second pass through the cycle will weaken the stress on the final syllables of this noun by one degree, which will eventually cause it to reduce.

I find this explanation inadequate on three grounds. First, if a homophonous trisyllabic noun-verb pair ending in *-ate* could be found, where the noun was "felt" to be primary, we would expect the noun to have a 1–3 contour, but the verb, by hypothesis derived by means of an extra pass through the cycle, would have a 1–0 stress contour. I know of one such noun-(denominal)verb pair that is trisyllabic and one

that is disyllabic. The trisyllabic example is *candidate*, which *Webster's Third New International Dictionary* lists also as a possible verb, giving it a 1–3 stress pattern. The disyllabic case is the verb *probate*. Both these verbs "feel" clearly denominal to me; thus, by the rules in SPE, they should have 1–0 contours. Such a stress contour would be derived for $probate_V$:

(120)	Base form	$[[pr\bar{o}b+\bar{æ}t]_N]_V$
	Rule [158]	1
	MSR (cii)	1 2
	MSR (cii)	1 3
	SAR	1 4
	Other rules	*[prowbət]

Again, it is not important that all speakers share my intuition that the verbs *candidate* and *probate* are denominal. The more important claim that I am making is that no homophonous pair of the following form *could* exist: $[1X3]_N$–$[1X0]_V$. This fact seems to be related somehow to Kiparsky's observation, (97), but, at present, it is not clear exactly how. Note that the problem of excluding $*probate_V$ can be reduced to the problem of excluding the base form in (120). If there were a principled way of excluding this and, similarly, of excluding (98a) and the base forms in (101) and (110), (97) would be explained, as well as the impossibility of $*candidate_V$ and $probate_V$. But at present, no way of excluding such forms exists.

The second objection I have to Chomsky and Halle's analysis is that it is far too strong. It predicts that whenever there is a homophonous verb-noun pair, regardless of which member is basic, if the basic member exhibits a 1–3 contour, the derived member will exhibit a 1–0 contour, since it will undergo a second cycle through the rules. Actually, however, it is only if the words end in *-ate* that any reduction can ever be observed.[73] To take a word that constitutes a near minimal pair with $delegate_V$–$delegate_N$, consider $dynamite_V$–$dynamite_N$, both of which I assume to derive from an underlying /dīnæmo+īt/,[74] and both of which exhibit a 1–3 stress contour.

[73] I will take up such contrasts as $document_V$–$document_N$ in §6.7 below.

[74] Here I make the further assumption, on which nothing depends, that the final *o* of *dynamo* will be deleted by the rule of Vowel Drop (cf. fn. 38 above).

In fact, in verb-noun or adjective-noun pairs ending in /Vt/ (for all other vowels for which I have been able to find examples), if one member has a 1–3 stress, so does the other. Some examples are $prostitute_{NV}$, $parachute_{NV}$, $creosote_{NV}$, $boycott_{NV}$, $umlaut_{NV}$, $thermostat_{NV}$, $alphabet_{NV}$, and $counterfeit_{NVA}$.

Another near minimal contrast is the noun-verb pair $renegade_N$–$renegade_V$, both of which presumably derive from the underlying form /renig+æd/ (cf. *renege*). In fact, regardless of the final vowel and the final consonant, I have found no examples, aside from words in *-ate*, in which one member of a homophonous pair can exhibit a 1–3 contour and the other a 1–0 contour. Some examples of the lack of this contrast are $sacrifice_{NV}$, $compromise_{NV}$, $handicap_{NV}$, $suicide_{NV}$, $tomahawk_{NV}$, $catalog_{NV}$, $pantomime_{NV}$, $guillotine_{NV}$, $manicure_{NV}$, and $ridicule_{NV}$. Nor do words ending in more than one consonant, except for *-ment* (cf. §6.7 below), ever exhibit reduction in one member of a homographous pair, as is indicated by such examples as $boomerang_{NV}$, $somersault_{NV}$, $manifest_{NV}$, $aquatint_{NV}$, $counterpoint_{NV}$, and $avalanche_{NV}$. Despite all these pairs, the rules in SPE would produce a reduced vowel in the final syllable of the derived member, whichever member of the pair this was chosen to be.

In one other respect the SPE analysis of the contrast in (92f) is too strong. Consider the verb-noun *dictate*. Assuming the verb to be basic, in line with my intuition (but note that nothing would be changed with the reverse assumption), and given the rules in SPE, we would expect the following derivations:

(121)	(a) Base form	$[dikt+\bar{æ}t]_V$	$[[dikt+\bar{æ}t]_V]_N$
	(b) Rule [158]	1	1
	MSR (cii)	1 2	1 2
	MSR (cii)		1 3
	SAR	1 3	1 4
	Other rules	[diktēyt]	*[diktət]

The rules in SPE predict that the stress reduction manifested in derived trisyllabic forms like $delegate_N$ should also turn up in derived disyllabic forms. In fact, however, reduction is limited to words of at least three syllables, as the following examples, all of which have 1–3 contours in both members of the pair, clearly show.

(122) *prò^{1}strà^{3}te*$_{VA}$, *fìltrà^{3}te*$_{VN}$, *trùncà^{3}te*$_{VA}$, *gỳrà^{3}te*$_{VA}$, *màn-dà^{3}te*$_{NV}$, *càstrà^{3}te*$_{VNA}$, *rèbà^{3}te*$_{NV}$

I know of no disyllabic pairs in *-ate* whose final vowel exhibits an [ēy]~[ə] alternation.

Summing up, it seems that the stress contrast in (92f) cannot be attributed to the operation of rules or processes of wide generality. First of all, as the pair *càndidà^{3}te*$_{NV}$ shows, denominal verbs never exhibit 1–0 contours: as far as I know, the reduction is limited to nouns and adjectives. Second, pairs like *dỳnamì^{3}te*$_{NV}$, *rènegà^{3}de*$_{NV}$, and *àquatì^{3}nt*$_{NV}$ show that the reduction only affects pairs ending in /ǣt/. Finally, words like those in (122) show that the process must be restricted to words with three or more syllables. All these facts find expression in rule (123).

(123) $$\begin{bmatrix}+\text{voc}\\ -\text{back}\\ +\text{low}\\ +\text{tns}\\ 3\ \text{Stress}\end{bmatrix} \rightarrow \begin{bmatrix}-\text{tns}\\ -\text{stress}\end{bmatrix} \Big/ \overset{1}{\text{V}}\text{C}_0\text{VC}_0 \text{---} \text{t\#} \Big]_{\text{NA}}$$

There is a class of nouns ending in the morpheme *-ate*, which is preceded by a noun denoting a role or a position, such as *sùltà^{3}te*, *èpìscopà^{3}te*, *prìncipà^{3}te*, *pàtrìàrchà^{3}te*, and *càlìphà^{3}te*, many of which do not undergo rule (123) (but cf. the alternative pronunciations *sùltà^{0}te* and the words *cò^{0}nsulà^{0}te* and *protèctorà^{0}te*, which must undergo rule (123)). In general, this morpheme *-ate* would be marked [-123]. Furthermore, there is a chemical and biological affix *-ate*, as in *sìlicà^{3}te*, *vànadà^{3}te*, *cỳanà^{3}te*, *pèctinà^{3}te*, *fìbrillà^{3}te*,[75] and *pètiolà^{3}te*, that would also be marked [-123]. Except for these cases, the rule appears to be fairly general. The only real exceptions I know of are the nouns *bìllingsgà^{3}te*, *sùrrogà^{3}te*, *càndidà^{3}te*, and *màgistrà^{3}te*, although the last two can optionally undergo the rule and be assigned 1–0 contours. (See SPE, p. 107, fn. 62, for further discussion.)

Thus, the stress contrasts in (92f), like those in (92c)–(92e), provide evidence neither for case (c) nor for the cycle. Unless such underlying forms as those in (120) and (121) can

[75]This word can be pronounced with a 1–0 contour. It would therefore have to be marked as being able to optionally undergo rule (116).

be ruled out on a principled basis, the existence of such pairs as *dỳnamì^{3}te*$_{NV}$, *rènegà^{3}de*$_{NV}$, *còmpromì^{3}se*$_{NV}$, and of the words in (122) constitutes strong counterevidence against formulating case (c) so that a final syllable with [2 Stress] will allow for stress to be retracted, as is proposed in SPE, pages 107–108. I suggest, therefore, that case (c) be restricted so that it retracts stress only when [1 Stress] has been placed upon the final syllable, and that alternations like those in (92f) be handled by rule (123).[76] We will see in §7.1 that this rule forms part of a larger process.

6.7. Let us now examine the stress contrasts in (92g). Chomsky and Halle propose the derivations shown in (124a) for the verbs and those in (124b) for the related nouns.

[76]There is one piece of evidence, unfortunately ambiguous, that would support the SPE analysis of *delegate*. It concerns the verb *cò^{1}nfiscà^{3}te* and its related adjective, which *Webster's Third New International Dictionary* cites either as having a 1–3 contour, or as being pronounced [kə̀^{0}nfì^{1}skə̀^{0}t]. The rules in SPE could not account for the former pronunciation, whereas this would be possible in my analysis, by marking this word [–123]. However, it is the latter pronunciation that is of more interest here. I can see no natural way of accounting for this form within my analysis, but it is exactly what would be predicted from the rules of SPE. The derivation would proceed as follows.

Base form	[[kɔn=fiskǣt]$_{V}$]$_{A}$
MSR (eii)	1
ASR	1 2
MSR (dii)	2 1 3
SAR	3 1 4
Rule [118]	0 1 4
Other rules	[kə̀^{0}nfì^{1}skə̀^{0}t]

The important fact to note about this derivation is that it is part (ii) of case (c) that retracts the stress on the second cycle. The medial syllable does not end in V[+son][+cns], as specified on p. 138, so it cannot be assigned the feature [+D], which would allow case (ci) to apply. Thus, stress is retracted only one syllable, which is what is desired here.

Although this pronunciation of the adjective *confiscate* clearly supports the SPE analysis, instead of one based on rule (123), it is the only word I know of that does so; and since I see no way for the SPE analysis to avoid such forms as **cà^{1}ndidà^{0}te*$_{V}$, **rènegà^{0}de*$_{V}$, **cò^{1}mpromì^{0}se*, **dì^{1}ctà^{0}te*, etc., I have chosen to keep rule (123) in the grammar, even though I am unable to derive *cò^{0}nfì^{1}scà^{0}te*$_{A}$ and *cò^{1}nfiscà^{3}te*$_{V}$ from the same underlying form. Note, however, that rule (123) can account for *dè^{1}signà^{0}te*$_{N}$, which has no natural analysis within SPE.

(124)

(a)	Base form	[dɔkument]$_V$		[tɔrment]$_V$	
	MSR (eii)	1		1	
	ASR	1 2		DNA	
	Rule [120]			2 1	
	SAR	1 3		3 1	
	Other rules	[dā^{1}kyə^{3}mənt]		[t^{3}ɔr^{1}mənt]	
(b)	Base form	[[dɔkument]$_V$]$_N$		[[tɔrment]$_V$]$_N$	
	MSR (eii)	1		1	
	ASR	1 2		DNA	
	MSR (di)	1 3	MSR (dii)	1 2	
	SAR	1 4		1 3	
	Other rules	[dā^{1}kyə^{0}mə^{0}nt]		[t^{1}ɔr^{3}mənt]	

I find this derivation of the noun *dȍcumə̀nt* unconvincing. First of all, the noun, not the verb, "feels" basic. If there is disagreement about this example, surely there can be none about the noun-verb pair *rè^{1}gim^{0}ə̀nt*$_N$–*rè^{1}gim^{3}ə́nt*$_V$, where the same contrast can be observed, but where the noun is clearly basic. Suppose, then, we were to postulate for these pairs derivations like those in (125), rather than like those in (124).

(125)	Base form	[dɔkument]$_N$	[[dɔkument]$_N$]$_V$
	MSR (bi)	1	1
	MSR (eii)		2 1
	ASR		1 2
	SAR		1 3
	Other rules	[dā^{1}kyə^{0}mə^{0}nt]	[dā^{1}kyəmə́^{3}nt]

This derivation produces exactly the same results, and yet it makes no use of case (c). Note also that the use of the cycle is unnecessary. The verb *dȍcumə́nt* can be derived as in (126).

(126)	Base form	[dɔkument]$_V$
	MSR (eii) (or (f))	1
	ASR	1 2
	SAR	1 3
	Other rules	[dā^{1}kyəmə́^{3}nt]

I see no reason to prefer the derivation of *document* in (124) to that in (126), and I conclude that such words cannot be used in support of either case (c) or the cycle.

Let us now turn to the more complex case of *t^{3}ȍrmə́nt*$^{1}_{V}$–*t^{1}ȍrmə́nt*$^{3}_{N}$. I have no quarrel with the derivation of the verb presented in (124a). But there is no necessity to assume the cyclical derivation of the noun shown in (124b). Assume that *torment* has assigned to it the feature [-case (b)] in the lexicon. As was pointed out in §3.2 above, such features are necessary in order to distinguish dialects that assign a 1–3 contour to *Oregon* from those that have a 1–0 contour.[77] That words ending in /nt/ must also be able to be stressed by case (b) or by case (f) can be seen from such minimal pairs as *sè^{1}cȃnt*–*sè^{1}cə̀nt* (both pronunciations are given in Kenyon and Knott) or *fȍr^{1}mȃnt*–*fȍr^{1}mə̀nt*. If, therefore, we enter *torment* in the lexicon with the feature [-case (b)], the derivation of the pair *t^{3}ȍrmə́nt*$^{1}_{V}$–*t^{1}ȍrmə́nt*$^{3}_{N}$ will proceed as in (127).

(127)	(a) Base form	[tɔrment]$_V$	(b) [tɔrment]$_N$
		-case (b)	-case (b)
		+ASR	+ASR
	Rule (95a)	-ASR[78]	DNA
	MSR (f)	1	1
	ASR	DNA	1 2
	Rule [120]	2 1	DNA
	SAR	3 1	1 3
	Other rules	[t^{3}ɔr^{1}mənt]	[t^{1}ɔr^{3}mənt]

Chomsky and Halle do not discuss this fact in any detail, but for verbs which end in /nt/ there are four other possible combinations of stress contours in noun-verb pairs. All five possibilities are shown in (128).

(128) (a) *t^{3}ȍrmə́nt*$^{1}_{V}$–*t^{1}ȍrmə́nt*$^{3}_{N}$. Cf. also *ȃ^{3}ugmə́nt*$^{1}_{V}$–*ȃ^{1}ug-mə́nt*$^{3}_{N}$, *ȃ^{3}llȳ*$^{1}_{V}$–*ȃ^{1}llȳ*$^{3}_{N}$, *ȃ^{3}llȍy*$^{1}_{V}$–*ȃ^{1}llȍy*$^{3}_{N}$, *sȗ^{3}rvȅy*$^{1}_{V}$–*sȗ^{1}rvȅy*$^{3}_{N}$, etc.

[77]The interesting discussion on pp. 175–176 concerning the tenseness of the vowels of *child* and *children* indicates the necessity of postulating rule features that refer to particular branches of rule schemata, although Chomsky and Halle, to the best of my knowledge, never discuss any cases of exceptions to a branch of the MSR.

[78]As will be discussed in greater detail in § 10, I will assume that redundancy rules like (95a) can change the specifications of idiosyncratically assigned rule features. Thus, the lexical feature [+ASR] that appears in the entry for *torment* will become [-ASR], by rule (95a), when this form appears as a verb.

(b) $c\grave{o}mm\acute{e}nt_V$–$c\acute{o}mm\grave{e}nt_N$. Cf. also $\acute{a}mb\check{u}sh_{VN}$, $b\acute{o}y$-$c\check{o}tt_{VN}$, $d\grave{e}l\check{u}ge_{VN}$, $cl\acute{i}m\check{a}x_{VN}$, $r\grave{e}b\acute{a}te_{VN}$, $\acute{u}mp\grave{i}re_{VN}$, $tr\acute{i}\check{u}mph_{VN}$, etc.

(c) $w\acute{a}rr\grave{a}nt_V$–$w\acute{a}rr\grave{a}nt_N$. Cf. also $ch\acute{a}ll\grave{e}nge_{VN}$

(d) $l\grave{a}m\acute{e}nt_V$–$l\grave{a}m\acute{e}nt_N$. Cf. also $\grave{a}tt\acute{a}ck_{VN}$, $\grave{a}rr\acute{e}st_{VN}$, $p\acute{o}l\grave{i}ce_{VN}$, $r\grave{e}pr\acute{i}eve_{VN}$, $d\grave{e}c\acute{a}y_{VN}$, $c\grave{o}ns\acute{e}nt_{VN}$, $d\grave{e}m\acute{a}nd_{VN}$, $d\grave{e}b\acute{a}te_{VN}$, $d\grave{e}f\acute{e}at_{VN}$, $c\check{o}qu\grave{e}tte_{NV}$, etc.

(e) $s\check{e}gm\acute{e}nt_V$–$s\acute{e}gm\grave{e}nt_N$. Cf. also $fr\check{a}gm\acute{e}nt_V$–$fr\acute{a}g$-$m\grave{e}nt_N$, $pres\acute{e}nt_V$–$pr\acute{e}s\grave{e}nt_N$, etc.

First, let us consider how the rules I have proposed above could generate this set of related stress configurations. I have already shown in (127) how I would propose to generate the pairs in (128a), which Chomsky and Halle consider to be the normal case. In (129) appears the derivation for the noun-verb pair *lament*.

(129)

	(a) Base form	$[læment]_V$	(b) $[læment]_N$
		-case (b)	-case (b)
		-ASR	-ASR
	MSR (f)	1	1
	ASR	DNA	DNA
	Rule [120]	DNA	DNA
	Other rules	$[l\grave{ə}m\acute{e}nt]$	$[l\grave{ə}m\acute{e}nt]$

The analysis of this type of verb-noun pair within the framework of SPE differs only trivially: where the words of (128d) are marked [-ASR] in my analysis, they would be marked [-case (c)] in the analysis of SPE.

For the words in (128e), I would propose the following derivations.

(130)

	(a) Base form	$[segment]_V$	(b)	$[segment]_N$
	Rule (95a)	-ASR		DNA
	MSR (f)	1	MSR (b) 1	
	ASR	DNA		DNA
	Rule [120]	2 1		DNA
	SAR	3 1		DNA
	Other rules	$[s\check{e}gm\acute{e}nt]$		$[s\acute{e}gm\grave{ə}nt]$

Words like the above could be derived in a number of ways by the rules in SPE. Probably the most natural would be to assume the noun to be basic, which "feels" correct to me,

and to assume an extra cycle in the derivation of the verb. Thus, the derivation of the noun $s\acute{e}gm\grave{ə}nt_N$ would be exactly the same as that shown in (130b), while the verb would be derived as shown in (131):

(131)

Base form	$[[segment]_N]_V$	
MSR (b)	1	
MSR (e)	2 1	
Rule [120]	2 1	(applies vacuously)
SAR	3 1	
Other rules	$[s\check{e}gm\acute{e}nt]$	

The only way in which SPE can derive such words as those in (128b), however, is shown in (132). (This problem is discussed on p. 140 of SPE.)

(132)

	(a) Base form	$[[kɔment]_S]_V$	(b) $[[kɔment]_S]_N$
	MSR (e)	1	1
	MSR (c)	1 2	1 2
	SAR	1 3	1 3
	Other rules	$[k\check{ə}m\acute{e}nt]$	$[k\check{ə}m\acute{e}nt]$

In other words, the fact that noun and verb are homophonous is accounted for by deriving both in exactly the same way, from an underlying stem. There is, however, no syntactic justification for postulating, in surface structure, a node Stem above *comment*, but not above *torment*, *lament*, or *segment*. Thus, this derivation constitutes another violation of the Chomsky-Halle-Lukoff naturalness condition, if this condition is strengthened appropriately, so that it not only forbids the ad hoc use of junctures but of any other syntactic information as well.

I propose, instead of the above derivations, which Chomsky and Halle admit are artificial, the following analysis:

(133)

	(a) Base form	$[kɔment]_V$	(b) $[kɔment]_N$
		-case (b)	-case (b)
		+ASR	+ASR
		[-95a]	[-95a]
	Rule (95a)	DNA	DNA
	MSR (f)	1	1
	ASR	1 2	1 2
	SAR	1 3	1 3
	Other rules	$[k\check{ə}m\acute{e}nt]$	$[k\check{ə}m\acute{e}nt]$

The important feature of this account is the assumption that lexical items can be marked so that they do not undergo a general redundancy rule. This assumption seems abundantly justified, independently of how words like those in (128b) are to be accounted for. Thus, for instance, such words as *hoax, traipse, Yoicks,* etc., must be marked [-Rule [8]], the rule that specifies that only dental clusters can be preceded by tense vowels (cf. SPE, p. 172 ff.). Furthermore, the words in (87a) and the prefixes in (113) are exceptions to the general rule (115), which specifies that words do not normally retract stress three syllables. Therefore, in their lexical representations these forms will be marked [-115]. They will, exceptionally, retract stress three syllables.

Likewise with *comment*: while most verbs do not retract stress, as rule (95a) stipulates, verbs like those in (96b) do, so that they will have to be marked [-95a] in addition to being marked [+ASR].[79] The derivation of the noun $\grave{c}\acute{o}mm\check{e}^{3}nt_{N}$ will not require reference to the former feature, as rule (95a) affects only verbs and adjectives, so that this derivation will exactly parallel that of the noun $\grave{t}\acute{o}rm\check{e}^{3}nt_{N}$. However, for the verb $comment_{V}$, the feature [-95a] will prevent rule (95a) from applying, as it did in the derivation of the verb $\grave{t}\acute{o}rm\check{e}^{1}nt_{V}$, which will change the feature [+ASR] to [-ASR]. Thus, the derivation for $\grave{c}\acute{o}mm\check{e}^{3}nt$ as a verb will exactly parallel that of $\grave{c}\acute{o}mm\check{e}^{3}nt$ as a noun: the ASR will apply in both derivations.

Finally, I would assume that the derivation of such forms as $\acute{w}\check{a}rr\grave{a}nt_{VN}$ is exactly parallel to the derivation of $\grave{c}\acute{o}m\text{-}m\check{e}^{3}nt_{VN}$, except that whereas rule (49), Destressing, idiosyncratically does not work for *comment,* it does work for *warrant.* This fact would have to be reflected either in the presence of a feature [-49] in the lexical representation of *comment* or in its segmental makeup, possibly by deriving it from a form with a geminate nasal, or even from the representation /KɔN=ment/ that is suggested on page 141 of SPE. (I disregard here the problem of =; see §7.1.)

[79]I have not come to any conclusion as to whether it is more normal for disyllabic nouns to retract stress by the ASR than not to retract it. Hence, I have been marking lexical items both [+ASR] (e.g., *comment* and *torment*) and [-ASR] (e.g., *lament, police*). Eventually, of course, only one of these marks will be necessary. However, since I cannot see how any points I will discuss would be affected by either choice, I have left it open for the present.

As far as I can see, there is no possible solution within the framework of SPE to the problem of assigning a 1–0 contour to the verb *warrant* that does not involve postulating the existence of a rule like (49). Thus, the forms in (128c) constitute evidence of the strongest kind for the existence of this rule.

To summarize this discussion of the stress possibilities of disyllabic verbs in /nt/, it appears that three of the five possible stress alternations—namely, those in (128a), (128d), and (128e)—can be handled equally well within the analysis of SPE or within my reanalysis. However, the derivations provided by SPE of verbs like those in (128b) and (128c) are clearly artificial, in comparison to those within the reanalysis.

There is stronger evidence for reanalyzing: within the framework of the reanalysis it is possible to provide a formal explanation for one fact that is a consequence of (97):[80] the lack of noun-verb pairs like $*\grave{p}\acute{o}l\check{i}^{1}ce_{N}$–$\grave{p}\grave{o}l\acute{i}^{3}ce_{V}$. Recall that there is no non-ad hoc way for SPE to exclude such underlying representations as the one shown in (101), which will produce the impossible stress alternation.

How can $*\grave{p}\acute{o}l\check{i}^{1}ce_{N}$–$\grave{p}\grave{o}l\acute{i}^{3}ce_{V}$ be excluded within my reanalysis? It is excluded simply because there can be no underlying representation provided for such a pair. If either member of a verb-noun pair exhibits retraction, the form must be marked [+ASR] in the lexicon. Since the verb we are trying to find a representation for—*to* $\grave{p}\grave{o}l\acute{i}^{3}ce$—has, by assumption, a 1–3 contour, the form *police* would have to be marked [+ASR], like *torment* and *comment.* In addition, since it is the verb in which retraction occurs, *police* would have to be marked [-95a]. Note that the first of the features we have had to postulate to derive the 1–3 contour on $police_{V}$, namely,

[80]As I said, I consider (97) to be a very deep observation about English stress, and there are other stress alternations it allows for which I have been able to find no explanation. Note, for instance, such pairs as $\acute{a}ttrib\grave{u}te_{N}$–$attr\grave{i}b\acute{u}te_{V}$; $\acute{a}r\check{i}thm\check{e}^{0}t\grave{i}c_{N}$–$\grave{a}rithm\acute{e}tic_{A}$. These forms are discussed in SPE, on p. 159, and on p. 88, fn. 41, respectively, but no explanation is provided for why the noun's primary stress is further to the left than that of the verb or adjective. Thus, note that nothing prevents SPE from postulating a $[[\ ]_{N}]_{V}$ structure for *attribute*, instead of the $[[\ ]_{V}]_{N}$ structure shown on p. 159, but such a structure would yield precisely the wrong results.

the feature [+ASR], already precludes the possibility of deriving a noun in which stress retraction does not take place from the same underlying form: *any* form marked [+ASR] in the lexicon will undergo stress retraction unless it can undergo rule (95a), which can change [+ASR] to [-ASR]. But only verbs and adjectives are affected by rule (95a): thus, if the lexical entry for *police* has the feature [+ASR], the associated noun must have a 1–3 contour.

Expressed differently, there are only four logically possible combinations of the plus and minus values for the features [ASR] and (95a). These are shown in (134), and following each logical possibility is a verb that has this feature configuration.

(134) (a) $\begin{bmatrix}+\text{ASR}\\+95a\end{bmatrix}$ *tórmènt*$_V$–*tórmènt*$_N$

(b) $\begin{bmatrix}+\text{ASR}\\-95a\end{bmatrix}$ *cómmènt*$_V$–*cómmènt*$_N$

(c) $\begin{bmatrix}-\text{ASR}\\+95a\end{bmatrix}$ *lámènt*$_V$–*lámènt*$_N$

(d) $\begin{bmatrix}-\text{ASR}\\-95a\end{bmatrix}$ *lámènt*$_V$–*lámènt*$_N$

The important thing to notice is that the distinct feature bundles in (134c) and (134d) characterize exactly the same classes of items: if a form is already marked [-ASR] in the lexicon, it makes no difference whether it undergoes rule (95a), which will vacuously reassign the feature [-ASR] to it. Thus, these two features allow for only three main classes of pairs: pairs like (128a) (*torment*); pairs like (128b) and (128c) (*comment* and *warrant*, respectively), which only differ from one another in the applicability of Destressing to the output of the ASR; and pairs like (128d) (*lament*). The existence of the type of stress contrast shown in (128e) (*segment*) is limited to verbs in /nt/; this limitation allows the possibility of case (b) assigning stress for the noun and case (f) for the verb, which is not germane to the present discussion and is a minor phenomenon in any case. There is no combination of the two features [±ASR] and [±95a] that could produce a pair like **pólice*$_N$–*políce*$_V$. The fact that such pairs appear not to exist (but cf. fn. 61) is thus explained in my reanalysis.

Therefore, since the contrast between *dócument*$_V$ and *dócument*$_N$ can be handled naturally without making use of

case (c) and the cycle, and since the SPE analysis of *tórment*$_V$–*tórment*$_N$ not only leads to unacceptably artificial derivations for verb-noun pairs like *cómment*$_V$–*cómment*$_N$, but also can provide no explanation for the nonexistence of such pairs as **police*$_N$–*police*$_V$, I conclude that the forms in (92g) cannot be construed as providing evidence either for case (c) or for the cycle. In fact, the nonexistence of such pairs as the latter must be taken as constituting counter-evidence to the claim that cyclically ordered rules can apply below the level of word boundaries.

6.8. Let us now briefly consider the claim that case (c) is involved in the derivation of the words in (92h). Chomsky and Halle discuss such contrasts as *illústrate*–*illustráte* on page 155 of SPE, suggesting there that the two forms be derived as shown in (135).

(135)

(a)

Base form	/ilustræt/
Rule [158]	DNA
MSR (eii)	1
ASR	1 2
SAR	1 3
Other rules	[Ilʌstrēyt]

(b)

	/ilustr+ǣt/
Rule [158]	1
MSR (cii)	1 2
SAR	1 3
Other rules	[ʌlʌstrēyt]

Rule [158], it will be recalled, only assigns stress to final tense affixes; by postulating that *illustrate*, with a 1–0–3 contour, contains no affix, Chomsky and Halle can block the application of rule [158] and assign final stress by case (e), after which the ASR will retract stress to the initial syllable. In order to assign a 0–1–3 contour, as in (135b), it is only necessary to consider *-ate* to be an affix, thus triggering the sequence of rules [158] and case (c).

It should be obvious that this account is somewhat artificial. First, it depends upon the existence of rule [158], whose only other function is to make it unnecessary to refer to a rule feature [±ASR] in accounting for contrasts like that between (17) and (18). Second, however *illustrate* is to be stressed, its relationship to the words *luster* and *lustrous* would have to be shown. This relationship suggests that the only possible underlying representation is /iN=lustr+ǣt/.[81]

[81] In §7.1, I will argue that the = boundary in /æd=umbr+ǣt/ and /æd=grænd+īz/ be replaced by +.

Similarly, the word *adumbrate*—which can be pronounced either [ædəmbrēyt] or [ədəmbrēyt], since this word presumably contains the morpheme /umbr/ (cf. *umbrella*, *penumbra*, *umbriferous*)—can only be represented by /æd=umbr+āt/. Whether *aggrandize* is pronounced [ægrəndāyz] or [əgrændāyz], if it is to be related to *grand*, both of its pronunciations must derive from the same form: /æd=grænd+īz/. It does not seem plausible to assume that the different pronunciations of these forms are directly traceable to independently motivated structural differences in their underlying forms. Rather, such words must differ somehow in the features that determine which rule of stress retraction will apply to them.

I agree with Chomsky and Halle that it is case (c) that is responsible for the stress retraction in examples like (92h). The clearest indication that this is the case is the nonexistence of such words as **titillate*, **atomize*, **juvenile*, etc., in which stress has been retracted to a penult that ends in a weak cluster. Also, there appears to be some regularity linking the applicability of case (c) with the presence of a stressed affix. The relationship, however, is not as direct as is claimed in SPE. In particular, I feel that when *aggrandize* is pronounced with a 1–0–3 contour, this pronunciation occurs *in spite of* the fact that it is trimorphemic, according to which one would expect it to exhibit a 0–1–3 contour on the basis of the indirect regularity linking stressed affixes to case (c). Therefore, when pronounced with a 1–0–3 contour, *aggrandize* will have to be marked with a rule feature. I will defer, however, until §6.9 below a precise statement of how case (c) is to be avoided formally in such cases.

6.9. Chomsky and Halle account for the contrasts exemplified in (92i) as shown in (136).

(136)

Base form	$[[æd{=}vīz]_V ər{+}y]_A$		Base form	$[[prɔmis]_V ər{+}y]_A$	
MSR (eii)	1		MSR (ei)	1	
MSR (ai)	2	1	MSR (ai)	2	1
MSR (cii)	1	2	MSR (cii)	1	2
[118]	1	0	[118]	DNA	
SAR	DNA		SAR	1	
Other rules	[ədvāyzə̆rĭy]		Other rules	[prăməsɔ̄rĭy]	

This analysis I find essentially correct, except that I see no need to assume the existence of two passes through cyclically ordered rules in these derivations. That is, I would propose that the stress contours on the forms in (92i) be derived by one pass through the rules, as indicated in (137).

(137)

Base form	/æd+vīz+ɔ̄r+i/[82]		Base form	/prɔmise+ɔ̄r+i/[83]	
			Vowel Drop[84]	Ø	
MSR (bi)	1		MSR (bi)	1	
MSR (cii)	1	2	MSR (ci)	1	2
[118]	1	0	SAR	1	3
Other rules	[ədvāyzə̆rĭy]		Other rules	[prăməsɔ̄rĭy]	

As Chomsky and Halle point out, the contrast between *confiscatory* and *anticipatory* exactly parallels the contrast in (137), so that case (c) must be formulated in such a way as to disregard a preceding *-at-*. Note that it is not possible here to make the claim that case (3) of the ASR is retracting stress for *anticipatory*, for if one were to mark *anticip(ate)* as [-115], the incorrect **anticipate* would be derived in isolation. An even stronger indication that the ASR is not responsible for the stress retraction in the examples of (92i) is the word *classificatory*, in which stress must be retracted *four* syllables, an operation the ASR never performs. For these reasons Chomsky and Halle formulate case (c) so that it disregards not only a preceding *-at-*, but also a preceding *-ficat-*. It is clear, therefore, that there must in fact be two processes of stress retraction in English, even though their effects often overlap.

But how do these two types of retraction differ? When is stress retracted by the ASR, and when by case (c)? If the arguments I have given in §§6.1–6.7 above are correct, many words whose stress retraction Chomsky and Halle account for by case (c) must instead undergo stress retraction by the ASR. It seems to me that arguments showing conclusively that case (c) is at work can only be constructed for words like

[82]I have replaced = by + in these examples. This change will be discussed in §7.1. Moreover, I assume, instead of the glide suffix /+y/ of SPE, that the final morpheme in *-ory* is a true vowel. This assumption will be justified in §7.5.

[83]The final /e/ in the underlying representation of *promise* will be deleted by the rule of *e*-Elision when this verb appears in isolation, as was discussed in § 4.3 above.

[84]This rule is discussed in fn. 38 above.

those in (92h) and (92i). What differentiates these cases from the other examples cited in (92) is the biconditional stated in (138).

(138) (a) Case (c) only retracts stress from affixes.

(b) Every affix from which stress is retracted has stress retracted from it by case (c).

Of these two generalizations, the one in (138a) seems to have the fewest exceptions. Exceptions to (138a) are words for which stress has only been retracted one syllable, but for which there is no motivation for postulating an affix. The only exceptions to this generalization that I have found are listed in (139).

(139) *defálcate, humèctate, amórtize*

It might be argued that words like *Ádirondack* and the other words in (89) are also counterexamples to (138a). However, since these words seem to be monomorphemic, and since three of them (*Achílles, Ulýsses, (neo)synéphrine*) have had stress retracted to a weak penult,[85] I would prefer to analyze these forms as exceptions to case (2) of the ASR, as I proposed in §5.3 above. The fact that (138a) has so few exceptions appears to me to constitute a significant enough generalization to formulate case (c) so that it will only be able to apply to a word that ends in an affix. The words in (139) will then have to be added to the small number of words in (89) that are marked [-case (2)]. Thus, when the ASR applies to the words in (139), it will not assign them the expected 1–0–3 contour, but rather a marked 0–1–3 contour.

[85]Of course, to claim that the penults of these words end in /ll/, /ss/, and /ffr/ (or possibly /frr/ or /ffrr/), respectively, is to reduce to near vacuity the claim that it is case (c) that is responsible for stress retraction in (89). There is no evidence, aside from stress retraction, that would support the postulation of underlying geminates. I say "near vacuity," because there is at least one segment, /θ/, that seems never to occur geminated (cf. fn. 9 above). Therefore, one who proposes that case (c) is at work in (89) is making the testable claim that such words as *Achíthes* [əkíθiyz] should be impossible. I have found no such examples, to be sure, but such a word does not sound ill-formed to me. Unfortunately, words with three or more syllables, whose last two syllables have a 1–3 contour, are rare in any event; thus, it seems impossible at present to demonstrate conclusively that an analysis depending on geminates must be ruled out.

What of (138b), the other half of the biconditional? Observe that the analysis in SPE asserts in effect both of the implications in (138), as is indicated by the discussion on pages 152–155 of SPE. To assert that rule [158] is in the grammar is to assert that stress can be retracted one syllable in a word by case (c) only if[86] the word ends in a tense affix. Ad hoc morpheme boundaries must then be inserted into the words of (139); in addition it must be claimed that such words as *illustráte, ádumbráte, cóncentráte, cónfiscáte*, and *órchestráte* have no morpheme boundary before *-ate*, and therefore do not contain the morphemes /lustr/, /umbr/, /kentr/, /fisk/ (cf. *fiscal*), and /ɔrkestræ/, respectively. I see no reason to make this additional claim, which I find counterintuitive in both respects. Rather, it seems that a more accurate description can be attained by building (138a) into the statement of case (c)—that is, by allowing case (c) to retract stress only from affixes—and then by marking such forms as *cóncentráte* with the feature [-case (c)].

One question remains: how are the affixes from which case (c) will eventually retract stress to receive stress? Chomsky and Halle point out (pp. 34–43 and pp. 98–100) that given the principles of disjunctive ordering, since case (e) is a subenvironment of case (c), case (e) must follow case (c) with which it will be disjunctively ordered. Obviously, therefore, since case (c) must retract stress that case (a) assigns, the ordering case (a)–case (c)–case (e) is fixed. Case (a) and case (c) will be conjunctively ordered, with the other orderings being disjunctive.

Making the minor change necessary to convert this ordering into the system of the present analysis is equivalent to claiming that the ordering of the three cases is case (b)–case (c)–case (f). That is, assuming that these three cases are to be formulated as indicated schematically in (140a), (140b), and (140c), respectively, Chomsky and Halle are proposing essentially the rule stated in (141).

(140) (a) $V \rightarrow [1\ \text{Stress}] / \text{---}\ C_0(W)\ \breve{V}\ (C_b)]$

(b) $V \rightarrow [1\ \text{Stress}] / \text{---}\ C_0(W) + \Sigma']$

(c) $V \rightarrow [1\ \text{Stress}] / \text{---}\ C_0]$

[86]Excluding, of course, cases where final stress has arisen through case (a) or through case (e) of an earlier cycle.

(141) $V \rightarrow [1\ \text{Stress}] / \text{---} C_0 ((W) \begin{Bmatrix} \check{V}(C_b) \\ {}^{1}_{+}\Sigma \end{Bmatrix})$

There is, however, a major disadvantage to rule (141): if case (c) precedes case (f), it will be necessary, by some rule other than case (f), to assign the stress to such affixes as *-oid*, from which stress is always retracted by case (c), or to *-ate*, which case (c) sometimes retracts stress from. Chomsky and Halle are therefore forced to stress these affixes before the MSR by their rule [158], which, as was pointed out above, has the defect of being, in essence, a duplication of case (f). Moreover, there are many similarities between case (c) and the ASR: both retract stress from a final syllable (which may be followed by a lax /i/).

I propose, therefore, to reorder the rules of (140): rules (140a) and (140c), cases (b) and (f) of the MSR, will form one natural rule, a rule that assigns primary stress to one of the last three syllables of a word. The MSR can thus retain the formulation given in (74) above, a formulation that appears complicated only because of the details of C_b.

The MSR will be followed by a Retraction Rule, which will have two cases: the first, which retracts stress in accordance with the Romance Stress Rule, will retract stress only from final affixes; the second, which retracts stress blindly, except for the choice between Case 2 and Case 3 of the ASR, will apply in all other instances.

As shown in (90) above, these two cases differ only in the optional inclusion of W in the latter, a fact that allows the ASR to be notationally collapsed with Case (c). The resulting rule appears in (142).

(142) RETRACTION RULE

$$V \rightarrow \left[1\ \text{stress}\right] / \text{---}\ C_0 \left((W) \begin{Bmatrix} (+C_0VC_0^1+)_0 \\ VC_0 \end{Bmatrix} \right) \begin{Bmatrix} {}^{1}\check{V}C_0 \left(\begin{Bmatrix} \left[\begin{smallmatrix} i \\ -tns \end{smallmatrix}\right] \\ \left[\begin{smallmatrix} -cns \\ -tns \end{smallmatrix}\right] \left[\begin{smallmatrix} +cns \\ +voc \end{smallmatrix}\right] \end{Bmatrix} \right) \\ \end{Bmatrix} \#$$

The term $(+C_0VC_0^1+)_0$ in the top line of (142) allows for the stress to be retracted, by the case (c) branch, over any number of affixes (*+æt+* in *anticipatory*, *+fik+æt+* in *classificatory*, *+in+* in *disciplinary*, etc. None end in more than one C.).

There is one further point that must be noted in connection with rule (142). It specifies that the basic choice of type of stress retraction in English depends upon whether or not stress is being retracted from an affix. As the examples in (143) show, this claim is basically right.

(143) phenómenon–electrón
cyanide–peróxide
ánthracite–smarágdite
crystalloid–mollúscoid
ásinine–elephántine
Gémini–alúmni

However, the most productive affix in all of English, *-ate*, seems generally to have stress retracted off of it by the ASR, instead of by the expected case (c): cf. *concentrate*, *illustrate*, *orchestrate*, etc. What is necessary, then, is a redundancy rule like (144).

(144) *+ate* → [-case (c) branch of (142)]

This concludes, then, my basic reanalysis of stress assignment and retraction. Primary stress will be assigned by the MSR (essentially as in (74)) and retracted as specified by (144) and (142).

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