

Stress Rules for Compound Words
in English

by

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Introduction

Stress rules formulated in Chomsky and Halle(1968)¹ are not satisfactory for explaining the stress pattern of compound words. In this paper we will examine some of the problems which come out from the stress assignment of compound words, with special attention to compound adjectives and their surface structure, and make a partial modification of the Compound Rule in SPE.

This study is based in principle on the framework of generative phonology that is elaborated in SPE, though we will sometimes have recourse to morphology, that is, the internal structure of words, in our analysis of stress pattern.

In Chapter I, we will discuss criteria for compound words and some problems concerning the treatment of stress distribution on compound adjectives. We will also examine the classification of words into two major categories and formulation of rules based on the classification for compound adjectives in Chapter II which includes the discussion on stress variation, rhythm stress, and some exceptional cases.

¹ Noam Chomsky and Morris Halle, The Sound Pattern of English (New York: Harper & Row, 1968). Hereafter this is abbreviated to SPE.

Chapter I

1.1.1. Syntactic criteria for compounds will be discussed in this section. Bloomfield(1933: 180, 223, 232)² suggests two syntactic criteria for compounds, and Adams(1973: 57-59)³ offers six tests and criteria.

First of all, according to Bloomfield, a compound word 'cannot be interrupted by other forms,' and this principle of indivisibility 'holds good almost universally. Thus, one can say black--I should say, bluish-black--birds, but one cannot similarly interrupt the compound word blackbirds. The exceptions to this principle are so rare as to seem almost pathological' (Bloomfield 1933: 180). Meys(1975: 83)⁴ also states that any word will not occupy a position between the constituent elements of a compound adjective. Marchand(1969: 22)⁵ insists as well that a pause is not placed between two elements of a compound German-Russian (War), for example, in comparison with a phrase long, grey (beard). This criterion of indivisibility functions

² Leonard Bloomfield, Language (New York: Holt, Rinehart and Winston, 1933).

³ Valerie Adams, An Introduction to Modern English Word-formation (London: Longman, 1973).

⁴ W. J. Meys, Compound Adjectives in English and the Ideal Speaker-Listener (Amsterdam: North-Holland, 1975).

⁵ Hans Marchand, The Categories and Types of Present-Day English Wordformation (München: C. H. Beck, 1969).

well at the syntactic level to qualify a sequence of independent words as a compound. Then, it is interesting here to examine the possibility of expanding the domain of this criterion to the morphological level (cf. Matthews 1974: 189).⁶ It is shown that one can decide whether or not the sequence heir apparent is a compound by applying the criterion at the morphological level; the sequence heir apparent is not a compound, as will be recognized by the fact that heir is still inflected in the plural as a separate unit such as heirs apparent. As far as this example is concerned, the expansion seems to bear full adequacy. However, since the word solicitor general takes both solicitor generals and solicitors general equally in the plural, and there are other examples of compounds whose first elements are inflected in the plural such as Lords-lieutenant, Lords Justices, makes-up, knights errant, courts-martial and cousins-german (cf. Jespersen 1913: Part II, 26, 487),⁷ this expansion of the criterion to the morphological level may be impossible, though we can use this criterion at the syntactic level as is shown above.

Let us proceed to another criterion of fixed order. As is stated in Bloomfield (1933: 229), the order of the elements in a compound word is fixed compared with that of the phrase. This

⁶ P. H. Matthews, Morphology (London: Cambridge Univ. Press, 1974).

⁷ Otto Jespersen, A Modern English Grammar on Historical Principles, II (London: George Allen & Unwin, 1913).

criterion is vulnerable to refutation, however, because the order of the phrase also tends to be fixed. Therefore, we cannot always use this fixed order as a criterion.

Lastly, we can examine two criteria and three tests for compounds proposed by Adams(1973: 57). The tests consist of three procedures: place an adverb before the first element; change the first element(the adjective) into comparative form; make a sentence with the second element(the head noun) as subject and the first element as predicative. Let us take the sequences small talk and wet day as examples. The resulting sequences are shown as follows respectively: very small talk; very wet day, smaller talk; wetter day, the talk is small; the day is wet. If all of the three, that is, very small talk, smaller talk, the talk is small, are semantically recognized as acceptable, the original sequence--in this case small talk, is referred to as a compound, others are not. However, as seen in Adams(1973: 57), these tests for compounds are not perfect ones, because 'good loser and good shot, for example, are well established to be felt as compounds in spite of acceptable expressions like very good loser, very good shot'(see also Meys 1975: 83). Another defect of this test is that its application is narrowly limited to a single class of compounds composed of an adjective + a noun. Note here that the first test, that is, the placement of adverb before the first element, is widely accepted(cf. Bloomfield 1933: 232, Marchand 1969: 21, Meys 1975: 83). As for adjective compounds, he asks

'whether the second element can stand alone as a premodifier' (Adams 1973: 91), taking a widespread and a deepseated as examples. He says, 'we can say a widespread feeling, a deepseated tradition, but not a spread feeling, a seated tradition' (p. 91). Thus, if the sequence is a compound, the second element cannot stand alone as a premodifier. Unfortunately, this test is also restricted to adverb-adjective/participle sequences.

Expressions such as door way, door knob, book case are recognized as compounds by virtue of the test presented in Adams (1973), because their first elements cannot be modified independently of their heads; in fact, if the first elements of such sequences take appropriate independent modifiers, such odd expressions emerge as: [[wooden door] way], [[outer door] knob], [[rare book] case]. We can accept the expressions wooden door, outer door, rare book as natural, but not [wooden [door way]], [outer [door knob]], [rare [book case]]. At the same time, however, Adams again questions the credibility of this test by pointing out such normal-looking expressions as [[confirmed bachelor] uncle] and [[generous] bachelor uncle], [[stone pine] tree] and [[tall] pine tree]. Hence, this test is not always very helpful either (cf. Adams 1973: 58).

The last criterion displayed in Adams (1973) and Jespersen (1913: Part II, 136, 185) is grammatical neutrality. There can be found three types of grammatical neutrality; number in first-words of compounds, loss of genitive 's, and a verbal stem with-

out endings. As regards the number of the first element of a compound, Adams states that its first element is grammatically neutral⁸ rather than singular, as demonstrated by the following examples: hop-picking(='the picking of hops'), tear gas(='gas which causes tears'), tooth decay(='decay of teeth')(Adams 1973: 58). However, a growing tendency to use the plural form in compounds can be recognized: a savings-bank(cf. in the sense a saving institution), an American Backwoodsman, the cigars bill.⁹ Accordingly, this criterion of neutral number likewise fails to cover all compounds. Next consider the absence of genitive 's in the first position of a compound. In the compound word pigtail, Adams states, 'we could say that a genitive 's is missing; the corresponding free phrase(with a different meaning) is pig's tail'(p. 59), on the contrary, he exemplifies the compound cat's meat with genitive 's. Moreover, note that the same compound is found in forms both with genitive 's and without it: dog('s)-grass, crow('s)-bill(Jespersen 1942: 277).¹⁰ Now, consider the next criterion of verbal stem without verbal endings. Adams

⁸ Meys(1975: 108-109) refers to this as 'indeterminate as to singularity or plurality'.

⁹ Although the words like savings and backwoods are sometimes used as singular rather than plural in some particular contexts, we regard them as plural because they attach the suffix -s instead of a zero-morpheme(cf. Jespersen 1913: 190).

¹⁰ Otto Jespersen, A Modern English Grammar on Historical Principles, VI (London: George Allen & Unwin, 1942).

(1973: 59) cites as examples watchdog, workman(cf. 'dog that watches', 'watching dog'; 'working man'), and argues that the neutral first elements in each example are verbal. In the case of this criterion, however, a generalization is more hopeless, because a large number of compounds with verbal endings in the first elements are commonly observable: drawing-pin, baking-powder, going-wheel, washing-machine, playing-field(Jespersen 1942: 159), weeping-willow, acquired taste(Adams 1973: 59), etc.

Now, let us review briefly what we have said in this section. We have examined the syntactic criteria and tests for compounds, and picked up the following criteria, indivisibility of the sequence, fixed order, and grammatical neutrality, as tests, (i) assessing independency of the second element as a premodifier, (ii) placing an adverb before the relevant sequence, (iii) checking by comparative form, (iv) making a sentence with elements in the sequence, and (v) measuring possibility of independent modification of the first element. As a result, it has been found that only the formulation of a uniform syntactic criterion for compounds is a difficult task. Among the criteria, it is the indivisibility of the sequence which alone seems to receive rather wider acceptability than any of the others. In other words, a sequence which cannot be interrupted in any syntactic way is morphologically recognized, and at the same time interpreted as an independent word because it has already attained a certain significance which distinguishes it from any free se-

quence of words.

1.1.2. Semantic criterion for identifying compounds has been employed and emphasized by such scholars as Jespersen and Quirk. For example, Jespersen states that we have a compound if the meaning of the whole cannot be logically deduced from the meaning of the elements separately (Jespersen 1942: 137). Thus, each example cited in (1) shows that a compound is a unit the meaning of which is not the sum total of the combined meanings of its component parts; a blackcap is not a 'cap which is black' but a 'bird black-topped head', a hot dog is not a 'dog which is hot' but a 'hot sausage sandwiched in roll of bread', and so on. In other words, the meaning of a compound word is not predictable from the individual words and their construction.

- (1) blackcap redcap
 bluejay silverfish
 hot dog tulip tree
 ladybird

However, as Bloomfield states, this criterion for compounds is not sufficient; in fact, in case of the compound madman, we can easily predict its meaning from the words mad and man (cf. Bloomfield 1933: 227). Furthermore, Meys (1975: 82-84) argues against this criterion by showing such compound adjectives as in (2):

- (2) a. well-recorded performances

- b. A self-winded watch
- c. A self-imposed duty
- d. Ice-free water
- e. Wafer-thin material
- f. A rain-interrupted day
- g. Snow-clearing workmen
- h. Fast-growing plants
- i. Stand-by orders
- j. A fold-down table

These expressions can be paraphrased as in (3):

- (3) a. Performances which { ^{were} have been } recorded well.
- b. A watch which winds itself.
- c. A duty which someone (has) imposed on himself.
- d. Water which is free from ice.
- e. Material which is (as) thin as { ^{wafers} a wafer } .
- f. A day which { ^{was} has been } interrupted by rain.
- g. Workmen who { ^{were} have been } clearing snow.
- h. Plants which { ^{grow} are growing } fast.
- i. Orders (for someone) to stand by.
- j. A table which (someone) { ^{folds} can fold } down.

Notice here that if we were to regard so-called 'semantic idiosyncrasy' as a criterion, compound adjectives such as those in (2) would not be given the status of compounds, since they do not support semantic idiosyncrasy; in other words, their meanings are predictable from their individual components.

For these reasons, the semantic criterion mentioned in this

section seems to hold fairly well with regard to noun compounds, although with some exceptions such as madman; however, with compound adjectives, this criterion simply does not stand up.

1.1.3. Stress has also been used as a criterion for compounds. Bloomfield(1933: 228) argues that 'wherever we can hear lesser or least stress upon a word which would always show high stress in a phrase, we describe it as a compound-member.' Quirk, et al(1972: 1019)¹¹ express their views on phonological criterion of compounds as follows: 'phonologically, compounds can often be identified as having a main stress on the first element and a secondary stress on the second element.' Comparing the compounds bláckbird, íce-crèam, with the phrases blàck bíd, íce créam, we will soon be aware of the difference of their implications. This view can be approved by many scholars(cf. Adams 1973: 59, Lees 1966: 120, Meys 1975:88-92).¹²

However, objections to this view are raised by Jespersen (1942: 135), Marchand(1969: 21), and also by Adams(1973: 59), Quirk(1972: 1039). Indeed, as Jespersen states, if we were to stick to the criterion of stress, we should withhold the name of compound from a large group of two-linked phrases that are gener-

¹¹ Randolph Quirk et al., A Grammar of Contemporary English (London: Longman, 1972). Hereafter abbreviated to Quirk.

¹² R. B. Lees, The Grammar of English Nominalizations (The Hague: Mouton, 1960).

ally called so, such as hèadmáster and stòne wáll (Jespersen 1942: Part VI, p. 135), and also àrchbìshop, vìcechàncèllor, àpplesáuce, dòwnstáirs, and fìrstkrátè--all of which carry main stress on the second element (Quirk 1972: 1039-40).

Moreover, according to Quirk, many of the compounds with secondary-primary stress pattern are not nouns, but verbs, adverbs, and especially adjectives: bàckfìre (verb), hèncefórt (adv.), and knèe-déep, flàt-fóotèd (adj.). Therefore, it is natural for Marchand (1969: 21) to conclude by saying that the criterion of stress holds good only for certain types of compounds. Adams (1973: 59), likewise, limits application of this criterion to certain types of compounds. For instance, compounds of certain patterns invariably have 1-3 stress pattern, as verb-object compounds of the pattern verb-ing + noun: chewing-gum, drinking-water; and all derivational compounds with a zero suffix, for instance spoonbill, bighead, hunchback.

Incidentally, we have limited ourselves to the discussion of stress of compound words used in isolation and parallel syntactic combinations proper, since the position of stress is sometimes influenced by contextual factors outside the word. Taking as an example the sequence easy-going man, the position of main stress on the compound word èasy-góing is shifted forward owing to the influence of heavy stress placed on the final word man, yielding the stress pattern éasy-gòing mán, when the compound is being used attributively in a noun phrase. Another example cited by

Quirk(1972: 1042) is that in the sentence I said she was a French teacher, not a fresh teacher, we could be referring to nationality. In this example, the main stress in the phrase French teacher(a teacher who is French) in isolation shifts from the second component to the first to indicate the contrast with fresh teacher. In other words, the sequence French teacher(meaning 'one who teaches French' in isolation) in this context does not imply 'one who teaches French' but 'a teacher who is French'. As is shown in the examples above, the context outside the word or phrase affects the location of main stress. These two instances of so-called 'rhythm stress' and 'contrastive stress' exemplified above will be discussed later in section (2.4).

In this section we have examined phonological criteria for compounds. Our conclusion is that the criterion of stress holds good only for certain types of verbs, adverbs, and especially adjectives.

1.1.4. Orthographic criteria also fail in generalization. Compounds are written as one word like bedroom, as two hyphenated words like tax-free, or as two separate words such as reading material, sometimes regardless of the degree of unity that may be felt between the elements(cf. Adams 1973: 59). Indeed, some compounds may even occur in three different forms, for example, flowerpot, flower-pot, flower pot.

According to Quirk, there seems to be a trend in which one

does not use the hyphens in American English, that is, compounds are usually written as two separate words. In direct contrast, in British English there tends to be more extensive use of the hyphen. The following examples show such different practice in the two varieties of English (cf. Qurik 1972: 1019, OED¹³ and Webster¹⁴).

(4)	<u>OED</u>	<u>Webster</u>
	<u>air-brake</u>	<u>air</u> <u>brake</u>
	<u>call-girl</u>	<u>call</u> <u>girl</u>
	<u>dry-dock</u>	<u>dry</u> <u>dock</u>
	<u>letter-writer</u>	<u>letter</u> <u>writer</u>

As exemplified in this section, spelling is an unreliable criterion for compounds, since usage varies a good deal among dictionaries and individuals.

1.1.5. We have observed the criterion of compounds in section (1.1) from these four points of view: (i) the syntactic, (ii) the semantic, (iii) the phonological and (iv) the orthographic. It has been found that the former three criteria are useful for recognizing a sequence of words as a compound word. However, none

¹³ James A. H. Murray et al., The Oxford English Dictionary, 13 vols. (Oxford: Clarendon, 1884-1933). Hereafter cited as OED.

¹⁴ Philip B. Gove, ed. Webster's Third New International Dictionary of the English Language (Springfield: Merriam, 1976). Hereafter abbreviated to Webster.

of these three markers can be used as strict defining criteria for all compounds in English, and of course it is impossible for us to find one uniform criterion for such a purpose. Therefore, as a general criterion, we will have to be satisfied with a broad definition of the compound as a form which is syntactically, semantically or phonologically isolated from a parallel syntactic group.

By way of conclusion, let us review here how Bloomfield, Jespersen, Marchand and Quirk describe compounds. Bloomfield maintains that it is a mistake to use the meaning as a criterion and that stress is the best criterion (Bloomfield 1933: 227ff.). This view has been criticized by Jespersen (1942: 134-137), who contends that we must rely on semantics, and may perhaps say that we have a compound if the meaning of the whole cannot be logically deduced from the meaning of the elements separately. Marchand (1969: 21-22) suggests that the compound must be morphologically isolated from a parallel syntactic group. This criterion is also insufficient, as Marchand himself suggests that although the sequences the Hóly Róman C atholic Ch urch or the Fr ench Revol ution are semantic or psychological units, they are not morphologically isolated; in fact, they are stressed like syntactic groups. Quirk describes compounds as isolated multi-based units which function as single words (cf. Quirk 1972: 1020). Meys suggests in greater detail that fore-stress, single-word characteristics ('isolability' and 'inseparability'), morpheme-inversion, seman-

tic particularization and even writing-conventions, should be used together as criteria. A sequence which meets some of these criteria is regarded as a compound(cf. Meys 1975: 84). All these criteria are not equally sufficient for each of the compounds in English, though they can hold in one way or another. To sum up, no clear-cut and overall division between compounds and syntactic groups is possible. We must make a case-by-case decision employing some of the criteria mentioned above when we face a compound-like sequence.

1.2.1. Compound adjectives as well as almost all adjectives may be used in two ways, that is, predicative and attributive. In this paper, we will confine our discussion to the predicative type of compound adjectives. For an inherent stress pattern of such adjectives is retained without change when they are used in isolation, that is, uninfluenced by other contextual features.

For example, among the large number of words in attributive use listed in (5), some adjectives are subject to a rhythm stress rule, and main stress is thus shifted forward(cf. Kenyon & Knott: 1953):¹⁵

- (5) 1 3 1 3 1
able-bodied man (able-bodied)
addlebrained boy (addlebrained)
bald-headed man (bald-headed)

¹⁵ John S. Kenyon and Thomas A. Knott, A Pronouncing Dictionary of American English (Springfield: Merriam, 1953).

1 3 1 3 1
barefaced lie (barefaced)
baseborn serf (baseborn)
chickenhearted hero (chickenhearted)
clean-cut edges (clean-cut)
closefisted miser (closefisted)
daylight-saving time (daylight saving)
double-lined bards (double-lined)
easy-going man (easy-going)
evenhanded justice (evenhanded)
fancy-free maiden (fancy-free)
fat-witted Falstaff (fat-witted)
grown-up boys (grown-up)
head-on crash (head-on)
highborn lass (highborn)
high-flown speech (high-flown)
ill-timed start (ill-timed)
jet-black eyes (jet-black)
kindhearted man (kindhearted)
knee-deep clover (knee-deep)
left-hand turn (left-hand)
levelheaded move (levelheaded)
made-up story (made-up)
manysided man (manysided)
new-laid egg (new-laid)
noble-minded man (noble-minded)
offcast clothes (offcast)
offhand way (offhand)
pea-green dress (pea-green)
penny-wise move (penny-wise)
quick-witted man (quick-witted)
rainproof hat (rainproof)
rattlehead notion (rattle-head)
sapheaded lout (sapheaded)

second-class fare (second-class)
tailor-made suit (tailor-made)
tax-exempt bond (tax-exempt)
underweight boxer (underweight)
up-to-date news (up-to-date)
warm-blooded valor (warm-blooded)
weatherproof top (weatherproof)
web-footed bird (web-footed)

All the words in parentheses show the stress pattern 3-1 when they are used in isolation. The words listed in (5) all have the possibility of assuming the rhythm stress. For example, the word able-bodied has in isolation the stress pattern 3-1, which may be reversed into 1-3 when it is used attributively, that is, when they are immediately followed by a word carrying the main stress.

The question is under what conditions this rhythm stress rule may operate, since rhythm stress does not always impose stress shift upon words with 3-1 stress pattern. Thus, some phrases like mealy-mouthed expression retain 3-1 stress pattern, while others such as quick-witted man do not. Even within the same phrase, there are two contrastive stress patterns: good-looking lifeguard, good-looking lifeguard.

At present, the rhythm stress rule, which usually operates in attributive use of compound adjectives, is not yet fully established and entails rather complicated formalism (cf. Liberman & Prince 1977: 309).¹⁶ For this reason, we will confine our dis-

¹⁶ Mark Liberman and Alan Prince, "On Stress and Linguistic Rhythm," Linguistic Inquiry, 8, No. 2 (1977), 249-336.

cussion to the predicative type of compound adjectives.

1.2.2. There are many ways to represent the stress patterns of compound words. To take the word thick-skinned, for example, in The Random House Dictionary of the English Language¹⁷ its stress pattern is described as thickskinned(thik'skind'); in OED Thi'ck-ski'nned; in COD¹⁸ thick-skinned(indicating phrasal stress); in Chambers¹⁹ thick'-skinned'; and in Kenyon and Knott(1953) thick-skinned θɪk'skɪnd. Although the method of representing phonetic facts in dictionaries differs greatly, they all show that the second syllable receives primary stress. In this paper, therefore, the even(or double) stress pattern in words such as lóng-lived, hígh-mínded, hárd-físted is indicated as 3-1 according to the treatment of these words in SPE(p. 90) using numeral stress degrees.

We will not employ the representation taken in Webster for stress patterns of compound adjectives, although it gives more information on the pronunciation than any other dictionary available at present. In Webster, for example, the stress pattern of

¹⁷ Jess Stein, ed., The Random House Dictionary of the English Language (New York: Random House, 1966). Henceforth cited as RHD.

¹⁸ J. B. Sykes, ed., The Concise Oxford Dictionary of Current English (Oxford: Oxford Univ. Press, 1976).

¹⁹ A. M. Macdonald, ed., Chambers Twentieth Century Dictionary (Edinburgh: Clark Constable, 1980).

the word thick-skinned is shown as \!:/\, which indicates that in some contexts the first syllable has primary stress and the second has tertiary stress,²⁰ while in other contexts both first and second syllables have primary stress. Let us take another example. The word mealy-mouthed is given the representation of \!:/\, which indicates that in some contexts the first syllable has tertiary stress and the second primary, while in other contexts vice versa. According to the explanation in Webster, the order primary-tertiary is especially common when another word, especially with stress on the first syllable, follows without pause, that is, when the first word is attributive. However, this explanation is not a complete one, for we cannot tell clearly whether the word in question bears the 1-3 stress pattern or 3-1 when it is used in isolation. Moreover, such word is not always subject to the so-called rhythm stress rule; its stress pattern may remain unchanged even when another word follows such as

3 1 1

mealy-mouthed hypocrite. For these reasons, we will not use the information obtained from the symbol \!:\ for the stress pattern of compound adjectives employed in Webster.

Now, note that the indication of stress patterns differs in the dictionaries and even among the different versions of the same dictionary. The examples in (6) show the different descrip-

²⁰ Precisely, this is not tertiary but secondary in Webster. However, we treat this as such, because we deal with secondary stress in the framework of SPE.

tion of stress patterns in the dictionaries:

(6)

	<u>RHD</u>	K & N	<u>OED</u>	Jones(1977)
<u>lowborn</u>	3 1	3 1	1 3	3 1
<u>hot-blooded</u>	3 1	3 1	1 3	3 1
<u>highborn</u>	1 3	3 1	1 3	1 3
<u>mealy-mouthed</u>	3 1	3 1	1 3	1 3
<u>thick-headed</u>	1 3	3 1	3 1	3 1

The word highborn, for instance, is assigned 1-3 stress pattern in RHD, OED and Jones(1977),²¹ while in Kenyon and Knott(1953) 3-1 stress pattern. The opposite type of stress in two versions of the same dictionary is instanced in the word make-up; the word has 3-1 stress pattern in Jones(1916),²² while 1-3 stress pattern in Jones(1977).

Furthermore, according to Matthews(1974: 192), the stress pattern of compound words such as milk shake, office party, teddy bear varies from dialect to dialect or speaker to speaker.

Matthews himself seems not to be sure whether he is referring to $\begin{matrix} 3 & 1 & 1 & 3 \\ \text{milk} & \text{shake} & \text{or} & \text{milk} & \text{shake} \end{matrix}$.

We must, therefore, adopt one dictionary as a basis of an

²¹ Daniel Jones, Everyman's English Pronouncing Dictionary (London: J. M. Dent & Sons, 1977).

²² Daniel Jones, An English Pronouncing Dictionary (London: J. M. Dent & Sons, 1916).

analysis in discussing the stress pattern of words. Here we will tentatively choose RHD because it has a large amount of entries of words in comparison with other American dictionaries (except for Webster) and also because it shows the stress pattern of words used in isolation.

1.2.3. Now, let us look over the treatment of the stress pattern of compound adjectives in other works. In SPE the following adjectives are regarded as compounds, which are thus subject to the Compound Rule (67) in SPE and assigned 1-3 stress (cf. p. 91-92):

- (7) hard-headed
hot-blooded
rose-colored
heart-rending
mealy-mouthed

However, in RHD and Kenyon and Knott (1953) the words hard-headed, hot-blooded and mealy-mouthed have 3-1 stress pattern, while the rest 1-3. Chomsky and Halle's insufficient treatment of the stress of compound adjectives in SPE mentioned above would be attributed to their neglect of one of the main properties of adjectives; that is, adjectives are used in both attributive and predicative positions. The words hard-headed, hot-blooded and mealy-mouthed are given 3-1 stress in predicative position, while 1-3 stress in attributive use. They mix up these two aspects of

stress patterns for compound adjectives and discuss them on the same level. Therefore, in their treatment of words the Compound Rule (67) can not explain the inherent stress pattern of compound adjectives used in isolation.

Bloomfield(1933: 228) also gives 1-3 stress pattern to all compound words without paying attention to the compound adjectives with 3-1 stress pattern. Quirk(1972: 1039) and Marchand (1969: 29) only argue that in the case of compound adjectives 3-1 stress is a basic pattern inherent in such works.

Adams(1973) deals with compound adjectives rather exhaustively. He classifies compound adjectives into ten types on the basis of their internal construction. He marks the difference of word stress pattern between predicative and attributive uses; when an adjectival compound is in attributive position, the main stress will normally fall on the first element, as in hánd-pícked men, a móth-eaten suit, while in predicative position, the main stress is often on the final element as in 'the men were hand-pícked'. In those cases where primary stress remains on the first element in predicative position, as in the suit was móth-eaten, he marks such primary stress with acute('). Examples like hand-pícked with 3-1 stress pattern in predicative but 1-3 in attributive position are left unmarked. Example such as mock-heroic, which shows 3-1 stress pattern even in attributive use, is marked simply: mock-heróic. The following list is taken from his classification and examples:

(8) I Adjunct-verb

IA Adverb-adjective

évergreen mock-heróic wide awake

IB Adverb-verb(-ing)

a. transitive

far-seeing hard-hitting long-suffering

b. intransitive

easy-going everlasting far-reaching

IC₁ Adverb-verb(-ed)(active)

a. transitive

hard-bitten well-read

b. intransitive

high-flown plain-spoken well-behaved

IC₂ Adverb-verb(-ed)

a. transitive(passive)

clean-shaven close-knit deep-set

b. intransitive

full-fledged much-travelled short-lived

II Subject-verb/complement

IIA Noun-verb(-ed)

a. transitive

hén-pecked íce-bound man-made

b. intransitive

crést-fallen chóp-fallen

IIB Noun-adjective

- colour-fast fancy-free foot-loose
- III Verb-object
- IIIA Noun-verb(-ing)
- all-embracing breath-taking card-carrying
- IIIB Noun-verbal adjective
- germ-resistant self-assertive
- IIIC Noun-verb(-ed)
- air-conditioned heart-broken tip-tilted
- IV Appositional
- foolish-witty devilish-holy bitter-sweet
- V Instrumental
- VA Noun-adjective
- bomb-happy camera-shy oil-rich
- VB Noun-verb(-ed)
- air-borne armour-clad bomb-blasted
- VI Locative
- VIA Locative noun-adjective
- brim-full night-blind world-famous
- VIB Locative noun-verb(-ed)
- factory-packed heart-felt heaven-born
- VII Comparative
- VIIA Intensifying
- VIIA₁ Noun-adjective
- crystal-clear daisy-fresh dirt-cheap
- VIIA₂ Verb(-ing)-adjective

- freezing cold hopping mad fighting drunk
- VIIB Particularizing
- VIIB₁ Noun-colour adjective
- ash blond blood red bottle green
- VIIB₂ Noun-adjective of 'extent' or 'measurement'
- day-long knee-deep life-long
- VIII Prepositional
- VIIIA Noun-adjective
- accident-prone bloodthirsty colour-blind
- VIIIB Noun-verb(-ed)
- canal-built capacity-filled diamond-cut
- IX Derivational
- pig-headed crack-brained dog-eared
- X Nominal attributives
- XA Verb-object-noun
- catch-penny break-neck lacklustre
- XB Other nominal attributives
- all-time bare-back floor-length

This classification gives us some useful information on the internal structure of compound words. With regard to the stress pattern of such words, however, little consideration is given; he simply shows word stress pattern, and neglects to make clear the relationship between the stress pattern and the internal structure of words. Consequently, he conflates two basically differ-

ent types of words into one category. Take ice-bound and man-made in IIA in (8) as examples. Their stress patterns are different, although they are classified into the same type. Therefore, we have to re-classify such words from the viewpoint of stress without resorting to his classification.

According to Liberman and Prince (1977: 308), adjectival compounds receive 3-1 stress as shown in (9):

- (9) a. grass-gréén
stone-déaf
crystal-cléar
skin-déep
- b. Anglo-Fréñch
politico-económic
socio-polítical
anarcho-sýndicalist
- c. high-bórn
ill-témpered
clean-cút
hot-héaded
- d. well-méaning
easy-góing
far-réaching
sweet-smélling

To be precise, the words in (9b) are not regarded as compound, because their first elements are not independent words but word-like forms, which will be discussed later. The word high-born in (9c) bears the stress pattern 1-3 in RHD, which will be discussed in (2.4.1). Liberman and Prince suggest that the compounds which have a stress pattern other than 3-1 seem to uniformly contain a noun as their first element: color-blind, class-conscious,²²
crest-fallen, ocean-going, frost-bitten, moth-eaten. Except for

²² In RHD the stress pattern of this word is 3-1.

"comparative" compounds like those listed under (9a),²⁴ and a few cases like hand-picked, home-made, it appears that we can regard adjectival compounds as having 1-3 stress pattern when they incorporate nouns(cf. Liberman and Prince 1977: 308). Such statements, especially to the effect that compound adjectives with 1-3 stress pattern have a noun as their first element, reflect their insight into the relationship between the stress pattern of compound adjectives and their internal structures. Unfortunately, they have not made a thorough investigation nor drawn a generalization from the features they have noticed. They only state the facts that 'a few cases like hand-picked, home-made' have 3-1 stress pattern, and do not go further to investigate the reason. Moreover, they fail to state the fact that some words have 1-3 pattern even when they do not have a noun as their first element such as bareheaded, knockkneed, palefaced. In this paper, therefore, we will make a full investigation and generalization concerning the relation between the stress and internal structure of compound adjectives.

²⁴ In those compounds, the second element is specified by a comparison with some quality characteristic of what the first element denotes. For example, the second element of the word stone-deaf is specified by the 'nature' of the first element stone; that is, its meaning is 'completely deaf like stone'.

Chapter II

2.1.1. According to Aronoff(1976),¹ morphology, which deals with the internal structure of words, is not something new. The early Indo-Europeanists were interested in morphology, and it has remained one of the mainstays of the philological tradition. However, English morphology itself is little studied or understood, except for the extensive bibliography in Marchand(1969) and Jespersen(1942) and Koziol(1972).² Within the generative framework, morphology was for a long time ignored. After the publication of Syntactic Structures(1957)³ many linguists concentrated their work on phonology and syntax. For them, grammar consisted of syntax and phonology. The new rise of morphology, or at least the declaration of its domain, is contained in Chomsky's "Remarks on Nominalization"(1970).⁴ However, Chomsky did not propose a theory of morphology; he merely suggested that there should be one, and what its properties should be(Aronoff

¹ Mark Aronoff, Word Formation in a Generative Grammar, Linguistic Inquiry Monograph 1 (Massachusetts: MIT Press, 1976).

² Herbert Koziol, Handbuch der englischen Wortbildungslehre (Heidelberg: Carl Winter, 1972).

³ Noam Chomsky, Syntactic Structures (The Hague: Mouton, 1957).

⁴ Noam Chomsky, "Remarks on Nominalization," in Readings in English Transformational Grammar, ed. Roderick A. Jacobs and Peter S. Rosenbaum (Massachusetts: Ginn, 1970).

1975: 1-6).

Note here that we will clarify below the relationship between the internal structure and the stress pattern of words, and formulate a stress rule for compound adjectives on the basis of information from morphology, that is, the internal structure of words. Therefore, strictly speaking, we deal with the stress pattern of words not within the framework of SPE, but within the framework of Chomsky(1970), although in principle we will carry out our study along the lines laid down by SPE.

2.1.2. In Meys(1975) the internal structure of compound adjectives is rather well analyzed; he has explored the deep structure and the surface structure of words and established some rules to transform the deep structure into the surface structure of words. Before entering into the classification of words, we must clarify the distinction of the terms 'surface structure' and 'underlying deep structure' of compound adjectives employed in Meys (1975) and this paper.

Meys classifies compound adjectives into five groups, giving detailed structural analysis to each type of words. The following chart shows his classification of words(Meys 1975: 105):

(1)	Left-branching	Right-branching
A	_____ + V- <u>ing</u>	V- <u>ing</u> + _____
	N <u>peace-loving</u>	N
	PRN <u>self-winding</u>	PRN
	ADJ <u>pleasant-testing</u>	ADJ

ADV	<u>slowly-moving</u>	ADV
P	<u>off-putting</u>	P

B	_____ + V-en	V-en + _____	
N	<u>snob-despised</u>	<u>sealed-for-life</u>	N
PRN	<u>self-generated</u>		PRN
ADJ	<u>ready-made</u>	<u>frozen-stiff</u>	ADJ
ADV	<u>easily-cleaned</u>		ADV
P	<u>downcast</u>	<u>burnt-out</u>	P

C	_____ + ADJ	ADJ + _____	
V	<u>seal-easy</u>	<u>easy-follow</u> (<u>difficult-to-master</u>)	V
N	<u>skin-tight</u>	<u>far-from-home</u> (<u>straight-from-the-press</u>)	N
PRN	<u>self-conscious</u>	<u>direct-to-you</u>	PRN
ADJ	<u>red-brown</u>		ADJ
ADV	<u>fully-adjustable</u>		ADV

D	_____ + P	P + _____	
V		<u>make-believe</u>	V
N		<u>tell-tale</u> (<u>ban-the-bomb</u>)	N
PRN	<u>self-build</u>	<u>prove-yourself</u> (<u>do-it-yourself</u>)	PRN
ADJ		<u>drip-dry</u> (<u>get-rich-quick</u>)	ADJ
ADV	<u>soft-sell</u>	<u>go-slow</u>	ADV
P	<u>through-flow</u>	<u>wrap-around</u>	P

(Symbols used in the chart: ADJ = Adjective, ADV = Adverb,

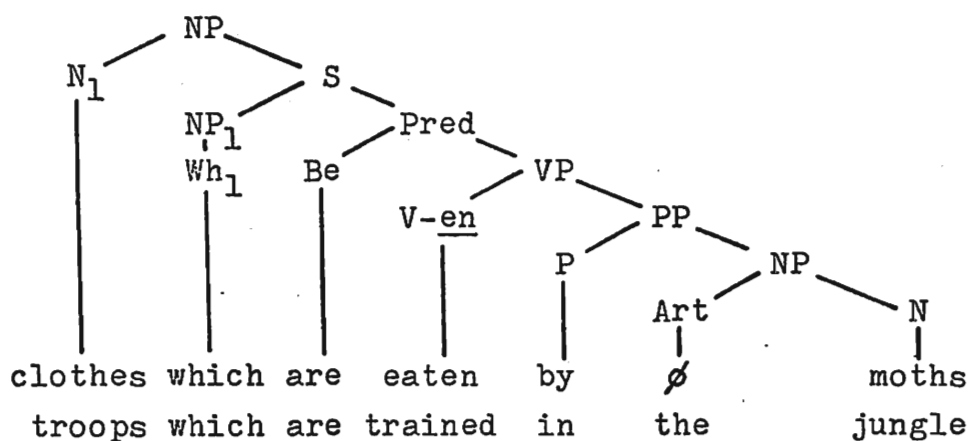
N = Noun, P = Preposition, PRN = Pronoun, V = Verb, -ing = Pres-

ent participle affix, -en = Past participle affix)

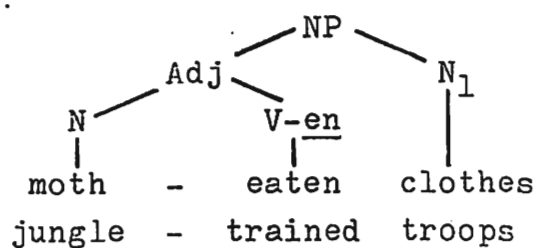
This chart reads as follows: to take the word red-brown for example, the word is classified into group C and has the structure of an adjective + an adjective.

Let us take some examples of compound words to make clear the relationship between their deep and surface structures. First, take moth-eaten and jungle-trained as examples. These words are categorized into type B with N + V-en structure in Meys(1975:105), and their deep and surface structures are indicated in the following diagrams:

(2) Deep structure

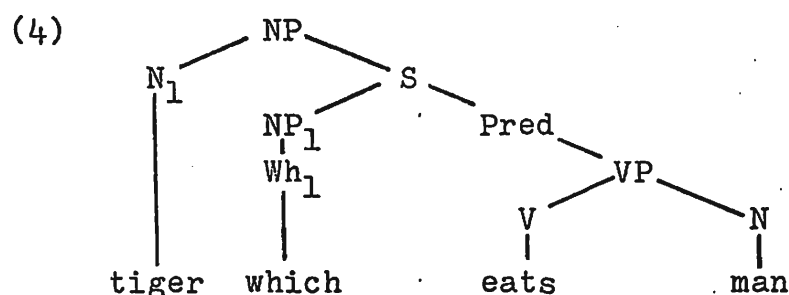


(3) Surface structure

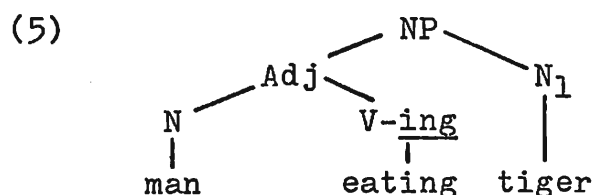


In comparison with the tree diagram in (3), the expression in (2) suggests that when the first element of the word in type B is a noun in the surface structure, the noun takes the form of prepositional phrase in the deep structure.

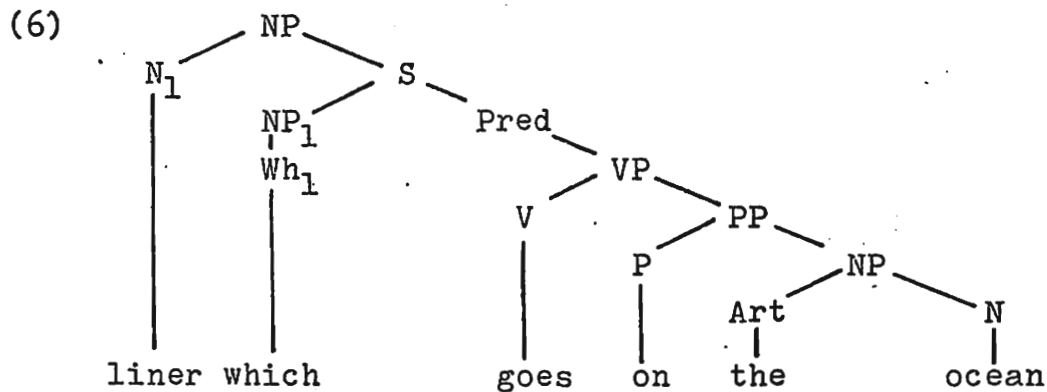
Next, consider the compound word man-eating tiger, the underlying structure of which can be represented in the following way:



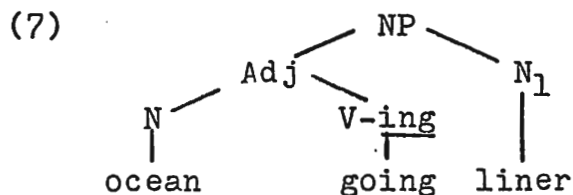
And the surface structure of the compound as shown in (5) is assumed to be derived from the above underlying structure (4)(cf. Meys 1975: 132):



The deep structure of the compound word ocean-going liner is more complicated as represented in diagram (6)(cf. Meys 1975: 145):



Similarly, the surface structure of the compound is indicated as follows:



As is shown by these examples, we can clarify the relation between the first and second element in the surface structure by virtue of the analysis of their deep structures.

However, we will not use the information from the deep structure in our analysis of stress pattern of compound adjectives. Indeed, it is not the underlying structure but the surface structure that directly determines the placement of stress. For example, the words man-eating and ocean-going have apparently the same surface structure and an identical 1-3 stress pattern in spite of their different underlying syntactic construction. In support of this view we may quote a statement from Chomsky and

Halle(1968: 92):

The operation of the transformational cycle is guided by the surface structure produced by the syntax.

Thus, it must be noted here that in this paper the formulation of stress rules is based primarily on information obtained at the level of surface structure.

2.1.3. Stress rules formulated in SPE do not fully explain the stress assignment mechanism of compounds. Moreover, a clear definition of compounds is not attempted either; Chomsky and Halle regard only the words with 1-3 stress pattern as compounds, and those with other stress pattern as phrases. However, this is not satisfactory for the criterion for compounds as is discussed in (1.1). Indeed, as Jespersen states, if we were to stick to the criterion of stress, we could not use the name of compound for a large group of phrases such as headmáster and stòne wáll which are commonly regarded as compound (Jespersen 1942: Part VI, p. 135). Thus, it is apparently misleading to use only stress as a criterion for establishing the status of compound. As is mentioned in (1.1.4), we will adopt the view from Marchand (1969: 21) that the compound must be morphologically isolated from a parallel syntactic group in making use of information from stressing (cf. Bloomfield 1933: 228, Harris 1947: 331).⁵ With the aid of

⁵ Zellig S. Harris, Structural Linguistics (Chicago: Univ. of Chicago Press, 1947).

this criterion we can properly explain the typical stress pattern of compound adjectives such as easy-going, icy-cold and hot-blooded within the scope of our present study.

2.2.0. Compound adjectives can be classified into two groups according to the difference of stress patterns; one is the type which shows 1-3 stress pattern such as eagle-eyed, milk-livered; the other is the type which shares 3-1 stress pattern as icy-cold, high-flown. In Marchand(1969: 29) and Quirk(1972: 1039) the 3-1 stress contour is referred to as a basic stress pattern of compound adjectives.

In the course of the ensuing discussion, however, it is revealed that there are a large amount of exceptional compound adjectives which have 1-3 stress pattern.⁶ Hence, we will here make clear what factors may function in differentiating 1-3 patterns from 3-1 pattern of compound adjectives through the analysis of the surface structure of each type.

2.2.1.0. Compound adjectives with 1-3 stress pattern can be analyzed into seven groups with typical examples parenthesized:

(8) a. N+N+ed (eagle-eyed, milk-livered, ring-necked)

⁶ In case of compound nouns, 1-3 stress pattern is more commonly observed, and if we took the position that compounds characteristically have 1-3 stress pattern, this pattern would be regarded as the 'unmarked case' of compounds, while 3-1 pattern the 'marked case'.

- b. N+V(pp) (heart-broken, moth-eaten, tongue-tied)
 c. N+V+-ing (heartbreaking, heartrending, earth-shaking)
 d. N+A (color-blind, bloodthirsty, water-tight)
 e. N+V+-ing (ocean-going, day-flying, sea-going)
 f. X+N+-ed (barefooted, bareheaded, knock-kneed)
 g. Adv+V(+ing) (oncoming, inrushing, downcast)

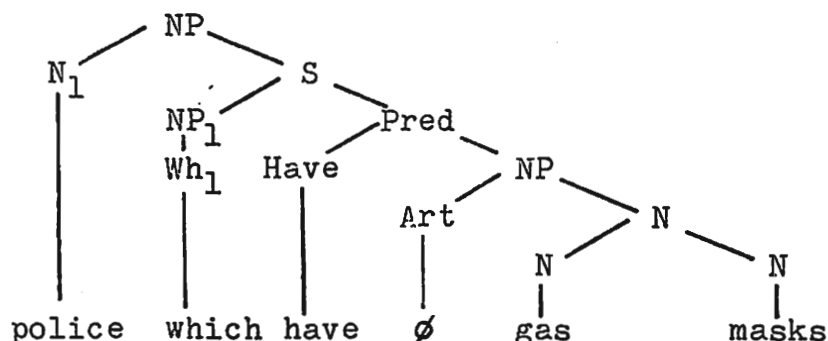
Notice here that although type(c) and type(e) have the same surface structure, we will classify them into two different types because the first element of each type has a slightly different function from the second one, which will be discussed later in (2.2.1.5).

2.2.1.1. Type(a): N+N+-ed

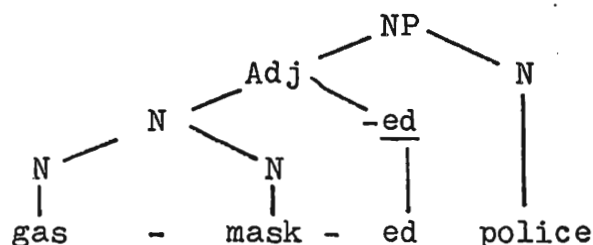
- | | | | |
|-----|-----------------------|------------------------|---------------------|
| (9) | <u>air-minded</u> | <u>cloud-capped</u> | <u>rose-colored</u> |
| | <u>almond-eyed</u> | <u>dog-eared</u> | <u>gas-masked</u> |
| | <u>ash-colored</u> | <u>eagle-eyed</u> | <u>harebrained</u> |
| | <u>assembly-lined</u> | <u>feather-brained</u> | <u>scar-faced</u> |
| | <u>bow-legged</u> | <u>milk-livered</u> | <u>shop-soiled</u> |
| | <u>bullnecked</u> | <u>pot-bellied</u> | <u>shovel-nosed</u> |
| | <u>candle-shaped</u> | <u>ring-necked</u> | <u>tube-shaped</u> |

All of the examples in (9) have the structure of a noun + a noun + -ed with 1-3 stress pattern. To take the word gas-masked for instance, the deep and surface structures of the word are analyzed as follows(cf. Meys 1975: 152):

(10) Deep structure



(11) Surface structure



Note here that the suffix of masked is not a form suggesting a past participle but an adjective-forming suffix, and mask itself is not a verb but a noun (cf. Hirtle 1969: 33, Hudson 1974: 71).⁷ Also, the word air-minded is analyzed into a noun mind plus -ed which is an adjective-forming suffix according to RHD. Hence, there are three types of -ed suffix: (i) a suffix which forms the past tense of weak verbs as in 'he crossed the river'; (ia) a suffix for the past participle of weak verbs as in 'he had crossed the river', (iib) of participle adjectives indicating a condi-

⁷ W. H. Hirtle, "-Ed Adjectives like 'verandahed' and 'blue-eyed', Journal of Linguistics 6(1969), 19-36.

⁸ R. A. Hudson, "Problems in the analysis of ed-adjectives," Journal of Linguistics 2(1975), 69-72.

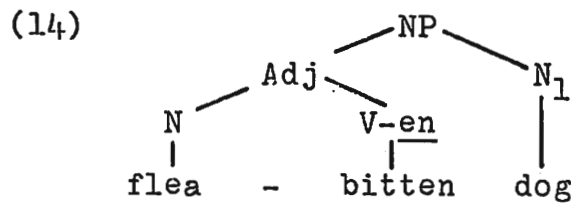
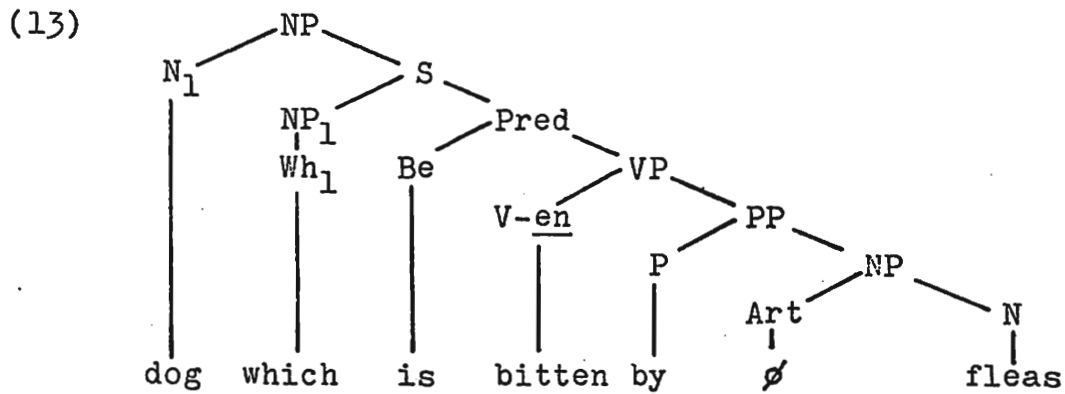
tion or quality resulting from the action of the verb as in 'in-flated balloons', and (iii) a suffix which forms adjectives from nouns as in 'beardeded', 'moneyeded', 'tender-hearteded'. All the examples listed in (9) consist of a noun plus a noun with the -ed suffix which makes adjectives from nouns. Adams(1973: 99-101) also states that the words almond-eyed, dog-eared, eagle-eyed, feather-brained, hare-brained and lynx-eyed are all composed of a noun plus a noun with -ed suffix.

However, we do not put the words such as ^{1 3 1}cock-eyed, ^{3 1 3}crack-brained, ^{1 3}prick-eared, ^{1 3}sway-backed into this category, because their first elements may be analyzed as a verb but not a noun respectively.

2.2.1.2. Type(b): ^{1 3}N+V(pp)

(12)	<u>air-bound</u>	<u>conscience-stricken</u>	<u>ghost-haunted</u>
	<u>armor-clad</u>	<u>custom-made</u>	<u>god-forsaken</u>
	<u>awe-struck</u>	<u>flea-bitten</u>	<u>heartstricken</u>
	<u>bedridden</u>	<u>flyblown</u>	<u>hell-bent</u>
	<u>bloodshot</u>	<u>fogbound</u>	<u>moth-eaten</u>
	<u>care-laden</u>	<u>footworn</u>	<u>time-honored</u>
	<u>clay-built</u>	<u>frostbitten</u>	<u>tongue-tied</u>

The examples of this type all have the structure a noun + a verb(past-participle) and the stress pattern 1-3. The deep and surface structures of the word flea-bitten are shown as in (13) and (14):



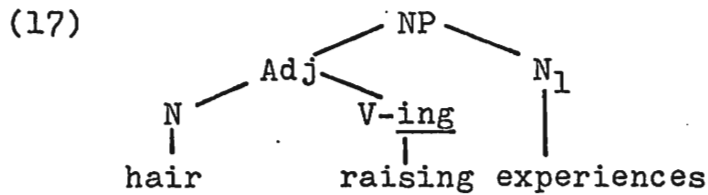
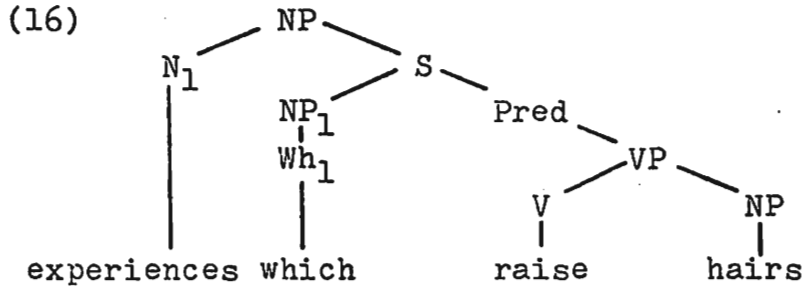
The internal structure of the second element of the word tongue-tied, for example, is not a noun tie plus -ed suffix but a past participle of the verb tie. According to OED (under tongue-tie and tongue-tied), the word tongue-tied is explained as 'formed on tongue(substantive) + tied(participial adjective) to become at length past participle of tongue-tie(verb),' the word tongue-tie is interpreted as 'formed on tongue(substantive) + tie(verb), or more probably a back-formation from the word tongue-tied.' More detailed explanations are given in Webster; the internal structure of the word is indicated as 'a noun tongue + tied, the second element of which is a past participle of verb tie.'

2.2.1.3. Type(c): N+V+^{1 3}-ing

- (15) awe-inspiring face-saving heartbreaking
 breath-taking fact-fronting heart-piercing

<u>cloud-kissing</u>	<u>faultfinding</u>	<u>heartrending</u>
<u>degree-conferring</u>	<u>freedom-loving</u>	<u>life-giving</u>
<u>ear-deafening</u>	<u>God-fearing</u>	<u>mind-filling</u>
<u>earth-shaking</u>	<u>hair-raising</u>	<u>soul-destroying</u>
<u>eye-opening</u>	<u>hairsplitting</u>	<u>tax-collecting</u>

All examples here are composed of a noun + a verb + -ing and have 1-3 stress pattern. The following tree diagrams illustrate the deep and surface structures of the word hair-raising in this type respectively:



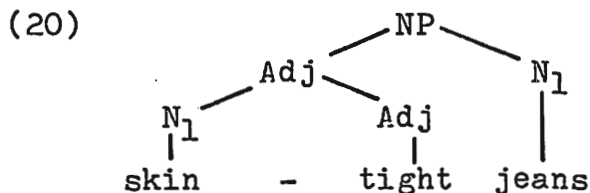
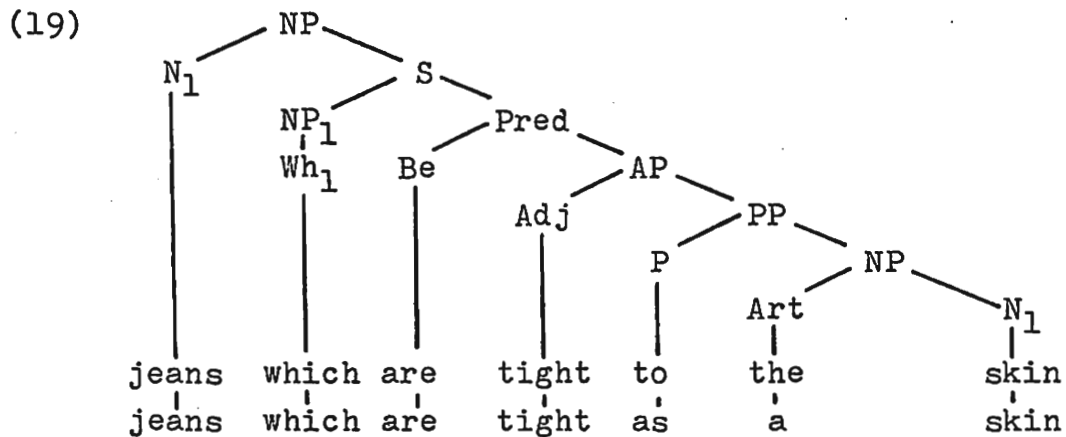
To take the word fact-fronting, for example, its internal structure is parsed into a noun fact + fronting(a present participle of the verb front).

2.2.1.4. Type(d): N+A^{1 3}

(18)	<u>airproof</u>	<u>bloodthirsty</u>	<u>oilrich</u>
	<u>airsick</u>	<u>color-blind</u>	<u>penney-wise</u>

<u>air-tight</u>	<u>fire-proof</u>	<u>pound-foolish</u>
<u>ash-pale</u>	<u>fool-proof</u>	<u>purpose-proud</u>
<u>bedsick</u>	<u>footsore</u>	<u>skin-tight</u>
<u>blameworthy</u>	<u>love-sick</u>	<u>snow-blind</u>
<u>bombproof</u>	<u>newsgreedy</u>	<u>water-tight</u>

The examples of this type consist of a noun + an adjective and have 1-3 stress pattern. The tree diagrams in (19) and (20) indicate the deep and surface structures of the word skin-tight in this type:



The majority of compound adjectives of this type can be derived in a straightforward way from a deep structure as in the diagram (19), in which an adjective, forming the second element in the surface structure (e.g. tight, in the case of the word skin-

tight), governs a prepositional phrase(e.g. as a skin or to the skin in (19)); and a noun such as skin in the deep structure comes out as a first element of the compound word in the surface structure.

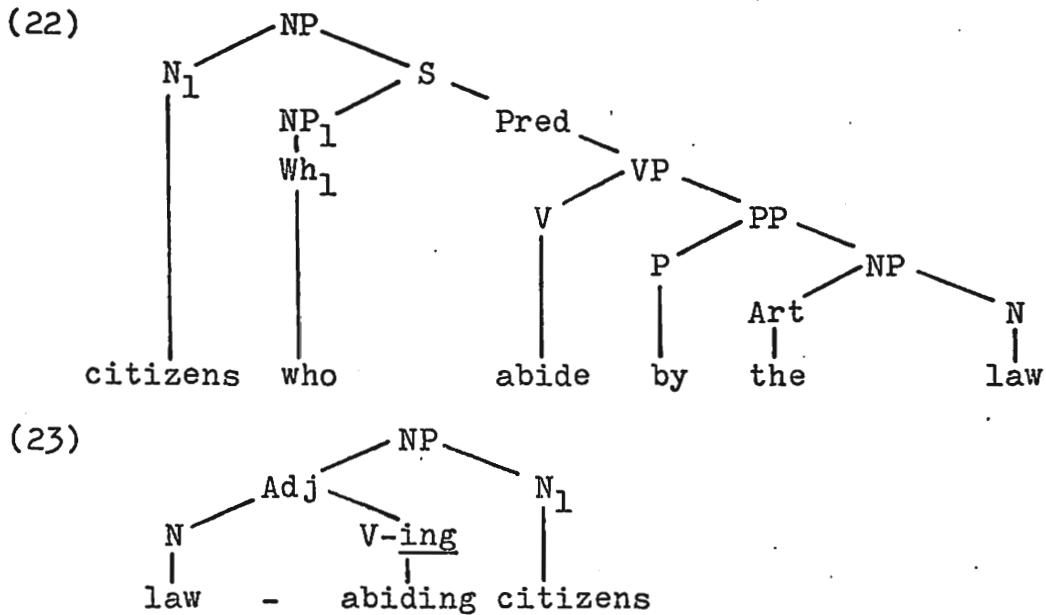
This type of word may be further subdivided into two or more groups according to the grammatical relation within the whole word. Take bloodthirsty, love-sick, footsore, newsgreedy, and snow-blind as examples. In the first example, the element blood functions as object of the adjective thirsty. On the other hand, the first element love in the second example is the cause of 'the state of being sick'. Words like footsore and newsgreedy would also belong to the object type, while snow-blind the cause type. However, it is unnecessary to introduce the notion 'cause' or 'object' into the classification of words because these two groups of words have the same 1-3 stress pattern and are classified into the same type(d) under the present system.

2.2.1.5. Type(e): N+V+^{1 3}-ing

(21)	<u>day-appearing</u>	<u>night-flying</u>	<u>sea-setting</u>
	<u>day-flying</u>	<u>night-lying</u>	<u>sea-voyaging</u>
	<u>day-journeying</u>	<u>ocean-going</u>	<u>summer-flowering</u>
	<u>day-shining</u>	<u>picture-going</u>	<u>summer-leaping</u>
	<u>law-abiding</u>	<u>sea-bathing</u>	<u>summer-ripening</u>
	<u>night-driving</u>	<u>sea-blackening</u>	<u>summer-swelling</u>
	<u>night-flowering</u>	<u>sea-going</u>	<u>wayfaring</u>

The examples of this type are composed of a noun + a verb +

-ing and carry 1-3 stress pattern. The deep and surface structures of the word law-abiding in this type, for example, are exhibited by the tree diagrams (22) and (23) respectively:



Words like summer-flowering and wayfaring appear not to be a member of the same type, because their internal structures are different; the first one is regarded as having the structure N + N + -ing, while the second as N + Adv + -ing. However, in spite of this difference these two words are put in the same category because the first element of each word is a noun; in fact, it is not the second but the first element which takes an important role in the distribution of the main stress of compound adjectives as will be discussed later.

Notice also that first elements of words like man-eating which belongs to type(c) and ocean-going which belongs to type(e)

have different properties in their deep structures, although each is treated as a noun at the level of surface structure; man functions as an object in the light of grammatical relation with eat-
ing, while ocean as a place. However, it must be noticed that we are trying here to establish not a precise categorization of compound adjectives through their underlying construction but a rule which governs the stress assignment of such adjectives with the help of information from their surface structure. Therefore, we must now recall the discussion in (2.2.1.0), in which we have differentiated the words such as ¹heart³breaking, ¹earth³shaking, ¹man³-eating from those like ¹ocean³-going, ¹day³-flying, ¹sea³-bathing and classified them into two types (c) and (e). Though the classification of the words into two types appears to be unnecessary in view of the foregoing discussion, we leave them as they are for ease of reference in this paper.

2.2.1.6. Type(f): ¹X+³N+-ed

(24)	<u>barefooted</u>	<u>bluecoated</u>	<u>harebrained</u>
	<u>barehanded</u>	<u>brazen-faced</u>	<u>hollow-eyed</u>
	<u>bareheaded</u>	<u>cockeyed</u>	<u>hunchbacked</u>
	<u>barelegged</u>	<u>crackbrained</u>	<u>knock-kneed</u>
	<u>bigwigged</u>	<u>cross-eyed</u>	<u>palefaced</u>
	<u>black-hearted</u>	<u>dimwitted</u>	<u>pig-headed</u>
	<u>bluebelled</u>	<u>draggled-tailed</u>	<u>sway-backed</u>

The cover symbol X stands for nouns, adjectives, and verbs. This type of word shows 1-3 stress pattern and X + a noun + -ed.

structure. Note here that the first element in this type of word is not always a noun, but also an adjective or a verb.

Some words in (24) such as barefooted, harebrained, knock-kneed have 3-1 stress pattern in Kenyon and Knott(1953), while they are given 1-3 stress pattern in RHD. Indeed, this 1-3 stress pattern has explanatory adequacy rather than 3-1 stress pattern in terms of the internal structure of words in this type (f). This point will be discussed later in (2.4.1).

Before entering into an analysis of this type, we must here make clear the meaning of the term 'bahuvrihi' the notion of which will be employed in the argument in this section. According to Bloomfield(1933: 235), a compound word is referred to as 'bahuvrihi' when the function of the whole word is not the same as that of the head word. Take the word turnkey as example; the first element of the word is an infinitive of a verb, while the whole word is a noun. In Webster 'bahuvrihi' is described as '(one) having a B that is A' where A stands for the first constituent of the compound and B for the second such as graybeard 'a man whose beard is gray, old man, sage', blockhead 'a stupid person'. Note that the meaning of the word graybeard is not literally 'a man whose beard is gray', but 'an old man and sage', and blockhead is not 'a man having a head that is a block(?)' but 'a stupid person'. The bahuvrihi compounds may be called exocentric compounds.

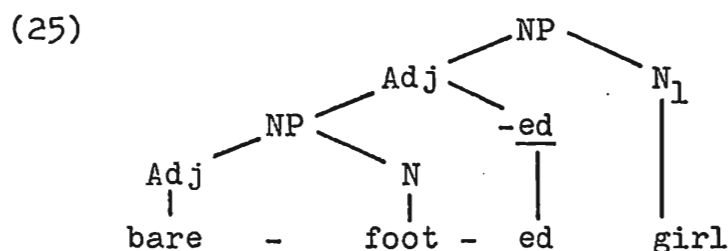
Now, let us return to the main point in this section. All

the words in (24) show 1-3 stress pattern, though their first element is not always a noun. A close examination of these words reveals an interesting fact; historically they are all derived from so called 'bahuvrihi' compounds. Take the word barefooted for instance. The structure of this word is assumed to be barefoot + -ed. Other words are handled in the same way:

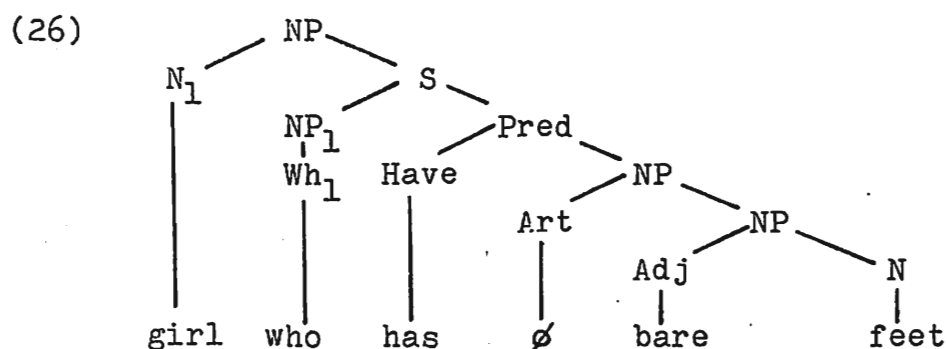
barehead + -ed, knockknee + -ed, pig-head + -ed, etc. Since these bahuvrihi compounds like barefoot, knockknee, pig-head have 1-3 stress pattern in isolation, we may assume that this stress pattern has been kept unchanged when these compound nouns became compound adjectives with an addition of -ed.⁹ In view of this fact, we can easily predict the stress pattern of words such as palefaced from its internal make-up paleface + -ed, although the word is composed of not N + N + -ed but Adj + N + -ed. Therefore, we may tentatively set up an ad hoc condition vis-à-vis the categorization of words into type(f) to the effect that even when the word structure is not analyzed as N + N + -ed, words with bahuvrihi construction equally have the stress pattern 1-3.

The word barefooted with Adj + N + -ed structure shows bahuvrihi construction as in the surface structure (25) below:

⁹ Cf. OED, Supplement Vol.I. under bahuvrihi, 'Possessive compounds(also called by the native Sanskrit grammatical term bahuvrihi) result, in the main, from the transformation of a compound noun into an adjective with the meaning 'possessing(or possessed of) so-and-so.'



And its deep structure is shown in (26):



2.2.1.7. Type(g): Adv+V^{1 3}(+ing)

(27)

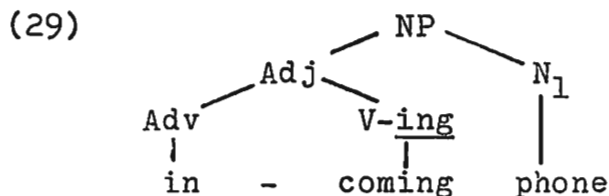
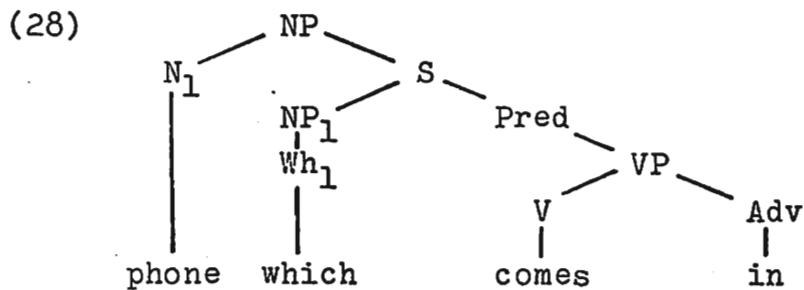
<u>downcast</u>	<u>indrawn</u>	<u>onlooking</u>
<u>downfallen</u>	<u>inrushing</u>	<u>outlying</u>
<u>downtrodden</u>	<u>oncoming</u>	<u>outgoing</u>
<u>incoming</u>	<u>ongoing</u>	

These examples have the structure an adverb + a verb(+ing) and the stress pattern 1-3, which is identical to that of the other types from (a) to (e), the only difference being structural, for the first element of this type is an adverb instead of a noun. However, each element in the words like oncoming, inrushing and downcast has a close syntactic relation, that is, they are derived from verb phrases come on, rush in, and cast

down respectively. Therefore, we may have to add one more ad hoc condition to the categorization of words with 1-3 type that if a close syntactic relation can be recognized in the adverb-verb combination, main stress falls on the first element as oncoming.

Note that we used here the term 'a close syntactic relation' in identifying this type(g), although the term is somewhat ambiguous. For example, there are some words such as outblown, outstanding, outspoken which carry the stress pattern 3-1 and yet have a close syntactic relation between the first and second element in their underlying structures; that is, they are derived from the verb phrases blow out, stand out, speak out respectively. This point will be discussed later in (2.2.2).

The deep and surface structures of the word incoming are shown as in (28) and (29):



2.2.1.8. To sum up the discussion of 1-3 stress pattern of com-

pound adjectives, the basic principles for stress assignment in such words will be stated as follows:

- (30) a. Primary stress is placed on the first element of compound adjectives when it is a noun in the surface structure.
- b. Primary stress is assigned to the first element in case of bahuvrihi construction even when it is not a noun in the surface structure.
- c. When a close relation can be recognized in the structure of adverb-verb combination, primary stress is given to the adverb.

2.2.2.0. Compound adjectives with 3-1 stress pattern can be classified into the following six groups with typical examples parenthesized:

- (31) h. A+A (icy-cold, German-Russian, bittersweet)
 3 1 3 1 3 1
 3 1 3 1 3 1
- i. A+N+-ed (hot-blooded, long-legged, light-footed)
 3 1 3 1 3 1
- j. Adv+V(pp) (high-strung, hard-bitten, high-flown)
 3 1 3 1 3 1
- k. Adv+V+-ing (quick-setting, easy-going, hard-working)
 3 1 3 1 3 1
- l. N+V(pp) (home-bred, heaven-born, homebound)
 3 1 3 1 3 1
- m. X+V+-ing (forthcoming, outstanding, all-affecting)
 3 1 3 1 3 1

As stated earlier, 3-1 stress pattern is fundamental among compound adjectives. Indeed, words of this type are numerous and very productive. For the sake of the following discussion, it will suffice to take up 21 instances in each section in (2.2.2)

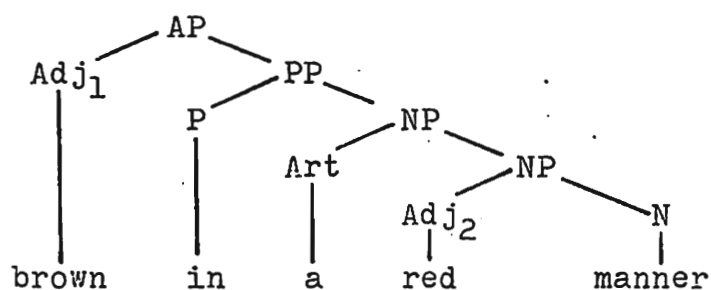
from among the copious amount of such words observable in English.

2.2.2.1. Type(h): $\begin{matrix} 3 & 1 \\ A+A \end{matrix}$

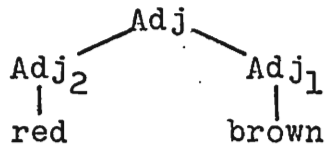
- | | | |
|------|-------------------------------|-------------------------|
| (32) | <u>bittersweet</u> | <u>heavy-thick</u> |
| | <u>bluish gray</u> | <u>honest-true</u> |
| | <u>blue-black</u> | <u>icy-cold</u> |
| | <u>comparative-synchronic</u> | <u>light-blue</u> |
| | <u>dark blue</u> | <u>light-green</u> |
| | <u>dark brown</u> | <u>red-brown</u> |
| | <u>deaf-mute</u> | <u>red-hot</u> |
| | <u>executive-legislative</u> | <u>social-economic</u> |
| | <u>German-Jewish</u> | <u>Swedish-American</u> |
| | <u>German-Russian</u> | <u>white-hot</u> |
| | | <u>worldly-wise</u> |

The structure of this type of examples is an adjective + an adjective with 3-1 stress pattern. The tree diagrams (33) and (34) indicate the deep and surface structures of the word red-brown:

(33) Deep structure



(34) Surface structure



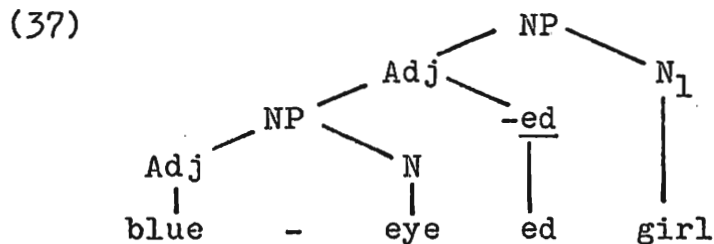
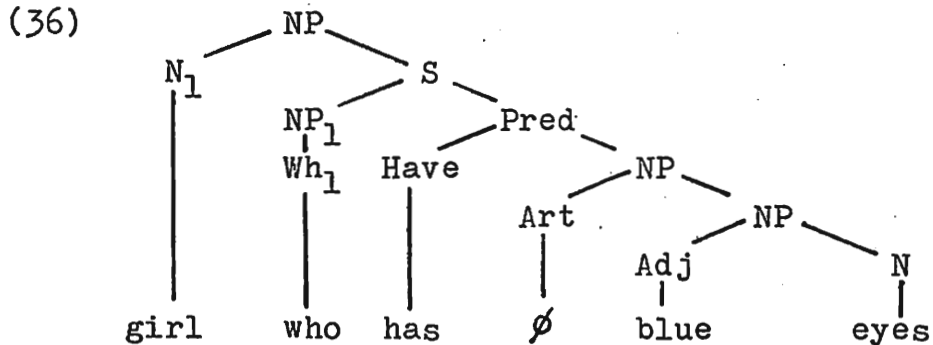
It is interesting to note that although all the forms with -o- like Anglo-, socio-, politico- have the corresponding adjectives such as English, social, political respectively, the forms with -o- are employed instead of such independent adjectival forms when combined with another adjectives to form compound adjectives. Quirk(1972: 1028) regards such forms with the infix -o- as adjectives. However, we will not treat them as such in spite of the function they perform with respect to stress assignment, because they are not morphologically independent forms; they are simply prefixes which share several functions and characteristics with common prefixes like mis-, im-, pre-, trans-, etc.(cf. Chomsky and Halle 1968: 100-110).

2.2.2.2. Type(i): A+N+^{3 1}-ed

(35)	<u>blue-eyed</u>	<u>high-minded</u>	<u>many-splendored</u>
	<u>bright-eyed</u>	<u>hot-blooded</u>	<u>open-hearted</u>
	<u>broad-leaved</u>	<u>iron-hearted</u>	<u>public-spirited</u>
	<u>cross-grained</u>	<u>long-legged</u>	<u>quick-tempered</u>
	<u>good-natured</u>	<u>light-footed</u>	<u>swift-footed</u>
	<u>hard-fisted</u>	<u>light-headed</u>	<u>three-legged</u>
	<u>hard-headed</u>	<u>mealy-mouthed</u>	<u>wrong-headed</u>

All examples of this type consist of an adjective + a noun + -ed with 3-1 stress pattern. The deep and surface structures

of the word blue-eyed are shown as in (36) and (37):



Numerals in words like three-legged, two-legged, four-footed are considered as adjectives, for a numeral within a word shows the same function as an adjective in placement of main stress. Thus, 3-1 stress pattern is also observed in the compound adjectives of this type.

We will analyze the second element of the words of type(i) as having a structure of a noun plus -ed suffix. Let us take some arguments for this treatment of the second element. First, Roeper and Siegel(1978: 234) stated that words like light-headed, bright-eyed, hard-headed, many-splendored do not involve verbs but are formed by adding the suffix -ed to the sequence adjective + noun; in other words, they are instances in which syntactic phrases are lexicalized. In each case the phrase undergoes no

significant transformation and seems to have an idiomatic quality.¹⁰

According to Adams(1973: 99-101) and RHD, such words as broad-leaved, cross-grained consist of an adjective and a noun plus an adjective-forming suffix -ed. Ljung(1975: 167) also argued that we can freely create adjectives with an -ed suffix by supplying nouns with new modifiers as in purple-eyed, seven-eyed¹¹(cf. see also Lees 1968: 128, Jespersen 1942: 429).¹²

It must be noted here that the identification of the second element of the words of type(i) can not always be carried out in a straightforward way. Hirtle(1969: 32-34) mentioned that it is not always easy to distinguish between nouns with -ed suffix and corresponding participles when the substantive and the verb have identical forms(cf. also Jespersen 1942: Part VI, p. 434).

Although there remain some ambiguous aspects concerning a precise grammatical classification of the second element of words, we will leave them open to question at present because it is not the second but the first element of words which takes a signifi-

¹⁰ Thomas Roeper and Muffy E. A. Siegel, "A Lexical Transformation for Verbal Compounds," Linguistic Inquiry 9 (1978), 199-260.

¹¹ Hagnus Ljung, "-ed adjectives revisited," Journal of Linguistics 12 (1976), 159-168.

¹² R. B. Lees, The Grammar of English Nominalizations (The Hague: Mouton, 1960).

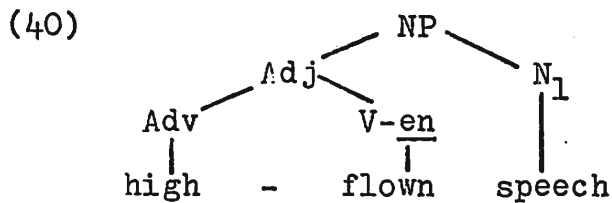
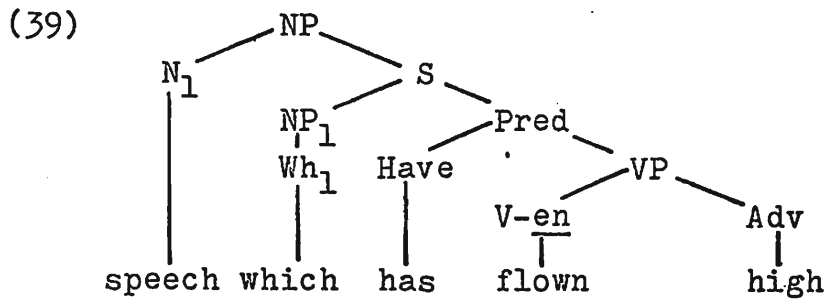
cant role with regard to the stress assignment of compound adjectives.

Words like hard-headed, hot-blooded, and mealy-mouthed may be subject to the Compound Rule (67) in Chomsky and Halle(1968: 91). When the rule applies, they will have the stress pattern 1-3. However, according to the descriptions in Kenyon and Knott (1953) and RHD their stress pattern is 3-1 instead of 1-3. One possible explanation of this reverse stress pattern is to resort to the pressure of rhythm rule under embedding: hard-headed men, hot-blooded Gods and mealy-mouthed phrases(cf. Liberman and Prince 1977: 309). This point will be further discussed in (2.4.2).

2.2.2.3. Type(j): Adv+V(pp)

(38)	<u>all-abhorred</u>	<u>full-fledged</u>	<u>ill-spent</u>
	<u>basebred</u>	<u>half-baked</u>	<u>low-bred</u>
	<u>clean-cut</u>	<u>high-bitten</u>	<u>low-born</u>
	<u>fair-spoken</u>	<u>high-flown</u>	<u>overwrought</u>
	<u>far-fetched</u>	<u>high-strung</u>	<u>quick-frozen</u>
	<u>far-flung</u>	<u>ill-bred</u>	<u>true-born</u>
	<u>first-born</u>	<u>ill-gotten</u>	<u>widespread</u>

All examples of this type share the construction of an adverb + a verb(past-participle), and the stress pattern is 3-1. The deep and surface structures of the word high-flown are indicated as an instance of the type in (39) and (40):



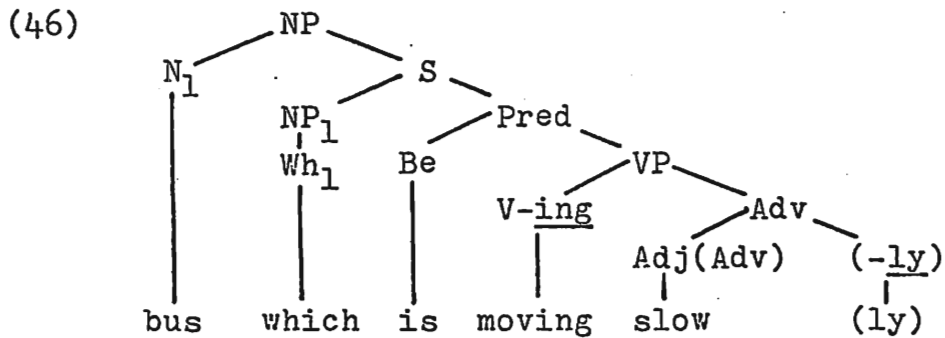
The first element of high-flown is regarded as an adverb but not an adjective, though the adverb high is identical in its form to the adjective high. Indeed, in the construction high-flown, the adverb high is employed instead of an adverb highly. We will not further investigate here the reason for the choice of the form high instead of highly in this case. Although we will freely make use of surface structure information in our analysis, we must resort to deep structure information in the case of words like high-flown, the first element of which has an identical adjectival form.

2.2.2.4. Type(k): Adv+V+³₁-ing

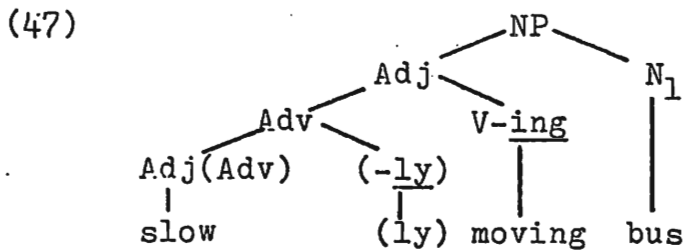
(41)	<u>easy-going</u>	<u>high-flying</u>	<u>overwhelming</u>
	<u>ever-changing</u>	<u>high-sounding</u>	<u>quick-cooking</u>
	<u>far-reaching</u>	<u>ill-faring</u>	<u>quick-setting</u>
	<u>far-seeing</u>	<u>ill-judging</u>	<u>slow-moving</u>
	<u>fast-moving</u>	<u>loose-fitting</u>	<u>sweet-smelling</u>

	<u>hard-working</u>	(work hard)
	<u>far-reaching</u>	(reach far)
	<u>far-seeing</u>	(see far)
	<u>hard-wearing</u>	(wear hard)
	<u>long-suffering</u>	(suffer long)
(45)	<u>beautifully-glowing</u>	(glow beautifully)
	<u>frequently-failing</u>	(fail frequently)
	<u>rapidly-expanding</u>	(expand rapidly)
	<u>rapidly-rising</u>	(rise rapidly)
	<u>free(ly)-moving</u>	(move freely)
	<u>light(ly)-stepping</u>	(step light(ly))
	<u>slow(ly)-moving</u>	(move slow(ly))
	<u>smart(ly)-dressing</u>	(dress smart(ly))
	<u>swift(ly)-falling</u>	(fall swiftly)

Their deep structure also shows that the -ly suffix is optional as in (46); thus, we find both expressions move slow and move slowly.



The surface structure of the word slow(ly)-moving is shown as in (47):



2.2.2.5. Type(1): $\begin{matrix} 3 & 1 \\ N+V(pp) \end{matrix}$

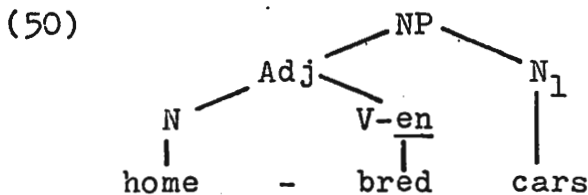
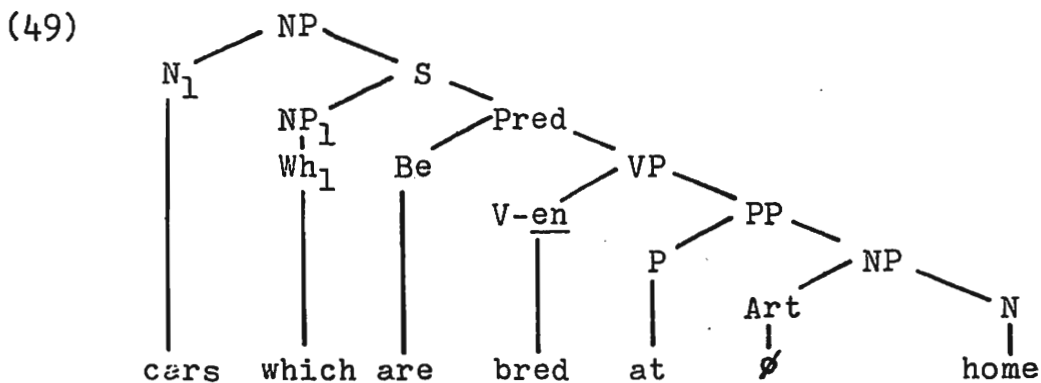
(48)

<u>earth-bound</u>	<u>heaven-given</u>	<u>homemade</u>
<u>heaven-accepted</u>	<u>heaven-made</u>	<u>house-bound</u>
<u>heaven-begot</u>	<u>heaven-taught</u>	<u>man-made</u>
<u>heaven-descended</u>	<u>home-based</u>	<u>shore-based</u>
<u>heaven-dyed</u>	<u>homebound</u>	<u>ski-bound</u>
<u>heaven-fallen</u>	<u>home-bred</u>	<u>space-stabilized</u>
<u>heaven-forsaken</u>	<u>homegrown</u>	<u>war-blinded</u>

All examples of this type share the common structure of a noun + a verb(past-participle), which may suggest the possibility of being grouped under type(b) with words such as $\begin{matrix} 1 & 3 \\ \text{heart-} & \text{broken} \end{matrix}$, $\begin{matrix} 1 & 3 \\ \text{moth-} & \text{eaten} \end{matrix}$, $\begin{matrix} 1 & 3 \\ \text{tongue-} & \text{tied} \end{matrix}$, since their first element can be regarded as a noun. Nevertheless, 3-1 stress pattern is assigned to the words in type(1). Thus, this fact reveals that the function of the first element in type(b) differs from that in type(1); in fact, the first element of all words in type(1) functions as ablative(cf. $\begin{matrix} 3 & 1 \\ \text{heaven-} & \text{born} \end{matrix}$) or locative(cf. $\begin{matrix} 3 & 1 \\ \text{home-} & \text{bred} \end{matrix}$) in the light of syntactic relations within the whole word, while the first element in type(b) functions as object(cf. $\begin{matrix} 1 & 3 \\ \text{conscience-} & \text{stricken} \end{matrix}$) or subject(cf. $\begin{matrix} 1 & 3 \\ \text{moth-} & \text{eaten} \end{matrix}$). According to Adams(1973: 97), words like $\begin{matrix} 3 & 1 & 3 \\ \text{country-} & \text{bred} \end{matrix}$, $\begin{matrix} 3 & 1 & 3 \\ \text{factory-} & \text{packed} \end{matrix}$, $\begin{matrix} 3 & 1 & 3 \\ \text{heaven-} & \text{born} \end{matrix}$, $\begin{matrix} 3 & 1 & 3 \\ \text{hell-} & \text{bent} \end{matrix}$, $\begin{matrix} 3 & 1 & 3 \\ \text{home-} & \text{bound} \end{matrix}$

¹ brewed, ³ London-trained, ¹ night-scented, ³ world-renowned have the structure of 'a locative noun + a verb(past-participle)'. For this reason, we can distinguish type(1) from type(b); that is, the words of N+V(pp) construction, if the first element functions as ablative within the whole word, are grouped into type(1) and receive primary stress on the second element, while others fall under type(b).¹³

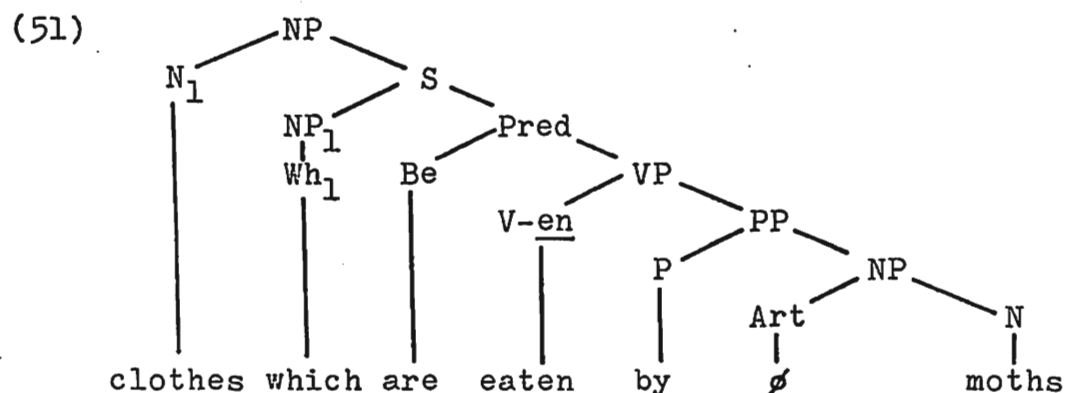
The following tree diagrams show the deep and surface structures of the word home-bred:



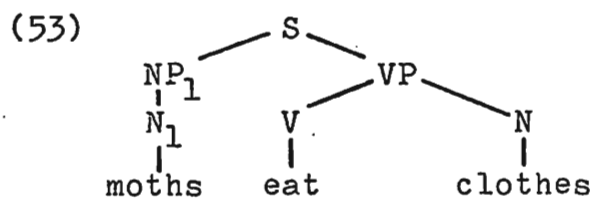
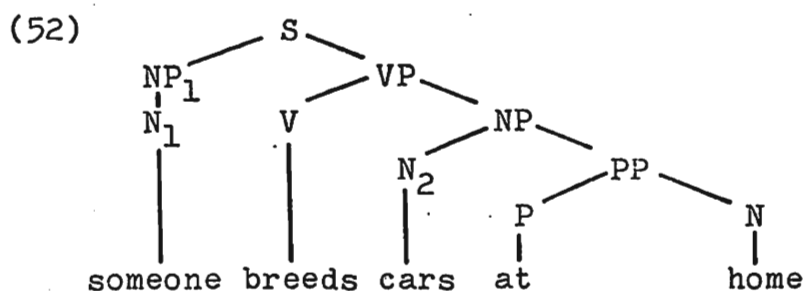
To be precise, we cannot distinguish type(1) from (b) by our deep structure analysis of words; the deep structure of home-bred and

¹³ Cf. OED, Vol. I. under ablative. In Latin the ablative was sometimes extended to the place and time at which anything is done. Thus, the ablative here includes the locative.

moth-eaten have an identical form. For example, the deep structure of moth-eaten is indicated in (51)(cf. the diagram(2) in (2.1.2)):



Therefore, we must employ here another level of the deep structure in which we can differentiate the word home-bred from moth-eaten as shown in (52) and (53):



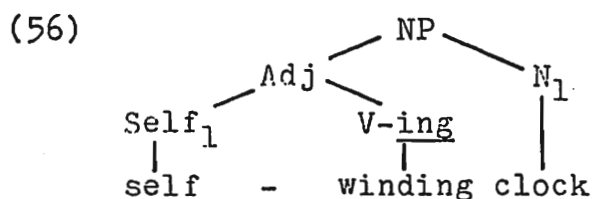
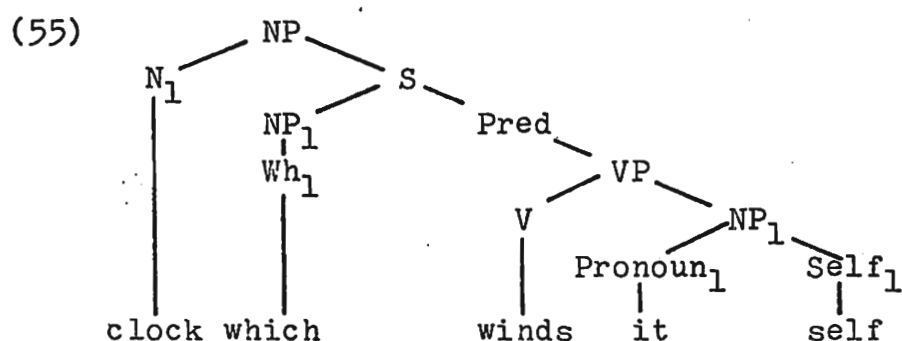
The tree diagrams (52) and (53) clearly show the different internal structures of the words home-bred and moth-eaten.

2.2.2.6. Type(m): $\overset{3}{X} \overset{1}{V} + \text{-ing}$

(54)	<u>all-affecting</u>	<u>self-deluding</u>	<u>self-pleasing</u>
	<u>all-destroying</u>	<u>self-elevating</u>	<u>self-propelling</u>
	<u>all-seeing</u>	<u>self-filling</u>	<u>self-rising</u>
	<u>all-shaking</u>	<u>self-finding</u>	<u>self-supporting</u>
	<u>self-advertising</u>	<u>self-killing</u>	<u>self-sustaining</u>
	<u>self-closing</u>	<u>self-mocking</u>	<u>well-being</u>
	<u>self-denying</u>	<u>self-organizing</u>	<u>well-meaning</u>

These examples are all composed of (i) an adverb + a verb + -ing or (ii) an adjective + a verb + -ing or (iii) a pronoun + a verb + -ing; each example has an identical 3-1 stress pattern. The cover symbol X stands for the three grammatical categories adjective, adverb, and pronoun other than noun because our rule, as will be shown later, operates properly only if it is shown that the first element of words is not a noun.

The deep and surface structures of the word self-winding are represented in (55) and (56):

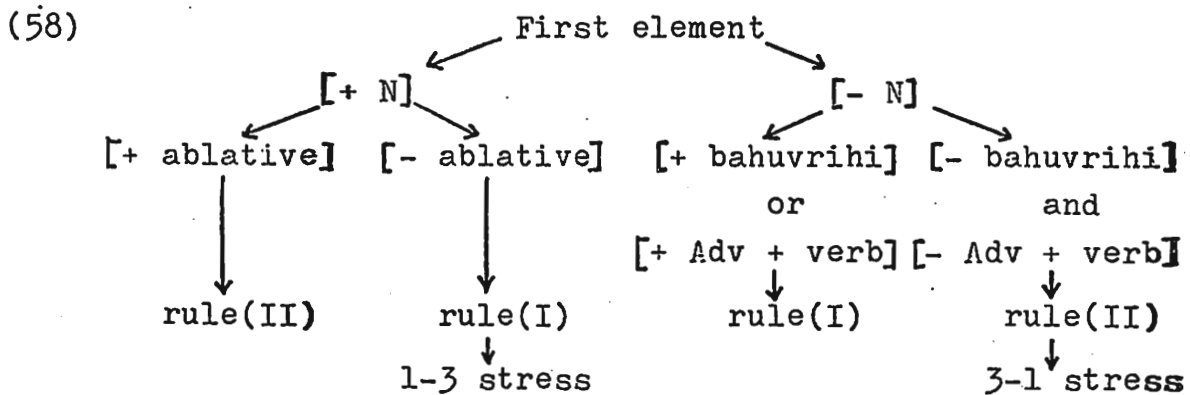


2.2.2.7. The discussion in (2.2.2) reveals the fact that primary stress is placed on the second element of compound adjectives when the first element is not a noun in their surface structure with the exception of type(1).

2.3.1. In the case of words with 1-3 stress pattern, as mentioned in (2.2.1), the first element plays an important role in the placement of main stress. Such is also the case with words which have the reverse stress pattern 3-1. The crucial point is not the classification of words into types but the grammatical function of the first element. Keeping this point and a brief summary in (2.2.1.8) and (2.2.2.7) in mind, we can make the following statements with regard to the stress assignment of compound adjectives:

- (57)
- a. Primary stress is given to the first element when it is a noun, otherwise to the second element.
 - b. Primary stress is assigned to the second element when the first element is a noun and functions as ablative within the whole word with N+V(pp) construction.
 - c. Primary stress is given to the first element in case of bahuvrihi or adverb-verb construction.

Alternatively, these facts are illustrated diagrammatically in (58) to show the internal relation of each element:



Our next task is to formulate anew the compound rule for adjectives by a modification of the Compound Rule (67) in SPE (p. 92):

$$(59) \quad (I) \quad \left[\underset{V}{1 \text{ stress}} \right] \rightarrow [1 \text{ stress}] / \left[\text{## } (X_Y)_{\text{F}} \text{## } Z \text{##} \right]_{\text{A}}$$

Conditions: a. $F = N$

b. $(F = \sim N) \wedge (B \vee \text{Adv+verb})$

$$(II) \quad \left[\underset{V}{1 \text{ stress}} \right] \rightarrow [1 \text{ stress}] / \left[\text{## } P \text{## } X_Y \text{##} \right]_{\text{A}}$$

Conditions: a. $P = \sim N$

b. $(P = N(\text{abl})) \wedge (N+V(\text{pp}))$

In these cases, F stands for the first element, N for noun, \sim for not, \wedge for and, B for bahuvrihi, \vee for or, Adv+verb for adverb-verb combination, N(abl) for noun in ablative use, N+V(pp) for noun + verb(past-participle) structure. Other symbols used here are borrowed from SPE, if not especially marked.

Now, let us examine how these rules operate, taking cock-eyed, icy-cold, over-bold, palefaced, homebound as examples. The

word cock-eyed belongs to type(a), which shows that the structure is N+N+-ed. Condition (a) in rule(59 I) being satisfied, the rule applies to the word in question to produce 1-3 stress pattern. On the other hand, rule(I) does not apply to the word icy-cold because icy is not a noun but an adjective. Accordingly, we proceed to rule(II), which satisfies condition (a) in rule(59 II) to yield 3-1 stress pattern. In case of palefaced, rule(I) applies to it to give 1-3 stress pattern, for it consists of a bahuvrihi noun(cf. 59 Ib). The word homebound receives 3-1 stress pattern(cf. 59 IIb) because the first element functions as ablative within the whole word. Although the word overbold does not belong to any type(a) through (m), we can deal with this word correctly, yielding 3-1 stress pattern, because the first element over is not a noun. Incidentally, the last example cited above shows that our formulation of rules has attained a rather acceptable accomplishment; in other words, our rules, which are established by means of a rather limited number of compound adjectives (i.e. words listed in (9)-(54)), are capable of explaining many other words like overbold, underbred, and underdone which are not included in our corpus.

2.3.2. As mentioned in (2.1.2), stress assignment in compound adjectives is guided by the surface structure. We have followed this view in principle. However, information obtained at the level of deep structure, that is, condition (b) in rule(59 I) and

condition (b) in rule(59 II), has been introduced into the formulation of rules (I) and (II). We cannot recognize an adverb-verb combination as having a close syntactic relation without resorting to information from the deep structure. With the help of such information and insight gleaned from the semantic and lexical components of words, we can decide whether a word incorporates a bahuvrihi construction within it. Moreover, we cannot say whether the first element of a word functions in the ablative until examining the underlying relation of each element within the word. Strictly speaking, since these three conditions may not belong to rules (I) and (II) but a readjustment rule, it may be adequate for them to be excluded from rules (I) and (II), though in our present system they are included in the same rule for ease of exposition.

2.4. We will next consider the following words, whose structures are specified under each word:

(60) bow-legged harebrained pig-headed
 (N + N + -ed) (N + N + -ed) (N + N + -ed)

As they stand now, their stress contour is identical with that which is predicted by their structures, their first element being a noun. The stress pattern 1-3 indicated here follows from RHD. In Kenyon and Knott(1953), however, the words in question have the 3-1 stress pattern. One explanation for this difference of stress pattern is to assume that main stress has shifted forward

over ten years or so. According to Quirk(1972: 1040), in American English there is a strong tendency to give initial stress to many compounds, and in normal American English use we have, for example, $\overset{1}{\text{applesauce}}$, $\overset{1}{\text{lawntennis}}$, $\overset{1}{\text{backfire}}$.¹⁴ This stress distribution occurs quite often in British English also. Indeed, 1-3 stress pattern rather than 3-1 is adequate to our rules (I) and (II), for the first element of those words is a noun rather than any other grammatical category. If it is really ascertained with the support of many pieces of evidence that there is a tendency of shifting main stress forward in such instances as cited above in American English, we will be able to explain other exceptional cases such as listed in (61) in the same way:

- (61) a. $\overset{1}{\text{bareheaded}}$ $\overset{1}{\text{high-bred}}$
 $\underset{3}{\text{high-born}}$ $\underset{3}{\text{two-faced}}$
- b. $\overset{3}{\text{barefaced}}$
 $\underset{3}{\text{barefisted}}$

As the words in (61a) consist of A+N+-ed, they are regarded as exceptions to rule (II) which assigns 3-1 stress to words with such a construction. The stress contour 1-3 might also be explained as a result of stress shift, though their first element is not a noun. On the contrary, the words in (61b)--for reasons

¹⁴ In Chambers the words backfire(verb) and lawntennis(noun) are assigned 3-1 stress pattern, while in RHD 1-3.

unknown--remain unsusceptible to shift. Thus, if the stress variation is established as a far-reaching tendency, these exceptional cases will be satisfactorily accounted for.

The difference in description of stress pattern of words listed above between RHD and Kenyon and Knott(1953) may be attributed to the difference in an editorial principle of the two dictionaries or dialectal variation they describe. Therefore, avoiding a hasty conclusion, we will simply speculate that there is stress variation among compound adjectives.

2.5. Finally, we will examine some exceptional words which can not be classified into any type. The words in (62) show the structure of an adjective + a noun, having 3-1 stress pattern.

(62)	<u>all-American</u>	<u>full-scale</u>	<u>middle-class</u>
	<u>backstage</u>	<u>general-purpose</u>	<u>narrow-gauge</u>
	<u>big-time</u>	<u>high-fidelity</u>	<u>off-color</u>
	<u>first-class</u>	<u>hot-water</u>	<u>old-hat</u>
	<u>foursquare</u>	<u>large-scale</u>	<u>open-air</u>
	<u>free-soil</u>	<u>left-wing</u>	<u>oversea</u>
	<u>front-page</u>	<u>long-distance</u>	<u>public-school</u>

All the examples listed above are adjectives, and there are corresponding noun phrases for each adjective. Thus, it seems that they are originally used as noun phrases and secondarily as adjectives. In case of noun phrases, their syntactic combination (i.e. an adjective + a noun) is natural; and as compound adjectives their stress pattern 3-1 has explanatory adequacy, for

their first element is not a noun.

However, opposing examples with 1-3 stress pattern can be observed easily as shown in (63):

(63)	<u>all-time</u>	<u>next-door</u>	<u>outboard</u>
	<u>back-door</u>	<u>madcap</u>	<u>overhead</u>
	<u>everyday</u>	<u>low-pressure</u>	<u>overland</u>
	<u>fair-weather</u>	<u>loose-leaf</u>	<u>overnight</u>
	<u>freehand</u>	<u>high-school</u>	<u>round-track</u>
	<u>fresh-water</u>	<u>one-time</u>	<u>sixpenny</u>
	<u>green-belt</u>	<u>one-track</u>	<u>still-life</u>

All the words cited in (63) reveal an identical structure with those in (62), though the stress pattern is reversed. To take the words ³ hot-water in (62) and ¹ fresh-water in (63) as examples, they both have the same structure of an adjective + a noun but the reverse stress pattern. We cannot find any feature which differentiates hot-water from fresh-water at the morphological level. For this reason, we have left the conclusion of this part of research in abeyance.

The words listed in (64) are examples of the structure of a noun + an adjective with 3-1 stress pattern.

(64)	<u>blood-red</u>	<u>ice-free</u>	<u>sea-green</u>
	<u>brand-new</u>	<u>honey-sweet</u>	<u>skin-deep</u>
	<u>duty-free</u>	<u>nut-brown</u>	<u>skintight</u>
	<u>fancy-free</u>	<u>pea-green</u>	<u>sky-blue</u>
	<u>milk-white</u>	<u>pitch-dark</u>	<u>sky-high</u>
	<u>letter-perfect</u>	<u>point-black</u>	<u>snow-white</u>
	<u>knee-high</u>	<u>post-free</u>	<u>steel-blue</u>

These are exceptions to the words in type(d) the structure of which is identical to them; that is, words in (64) are assigned the reverse stress pattern 3-1 to those in type(d) in spite of having an identical structure. For example, bloodthirsty in type(d) and blood-red in (64) have the same structure, though their stress patterns are completely different.

Some of the words in (64) such as blood-red, milk-white, pitch-dark, sky-high, snow-white are characterized by the feature that they consist of a noun + an adjective of 'extent' or 'measurement' as Adams(1973: 98) suggested. However, the other words such as duty-free, ice-free, post-free, honeysweet do not share such a feature. Moreover, the words like day-long, life-long which are qualified by the feature have the 1-3 stress pattern. Therefore, we leave such words as in (64) unaccounted for at present.

Compound adjectives composed of a noun + a noun cannot be treated properly also in our analysis, since the stress pattern of words like life-size, knee-length, rock-bottom, standard-gauge is opposed to that of words like box-office, peace-time, post-office, space-writer.

A satisfactory explanation on the stress patterns is not given to all the examples cited in (65) either:

(65)

a.

fallen-off
unbought-on

unhoped-for
unlooked-for

b.

heart-felt
air-borne

uncalled-for unthought-of
uncared-for unwished-for
unheard-of

The words heart-felt and air-borne with 1-3 stress pattern in (65b) are exceptions to rule (II) since their first element functions in the ablative(or locative) such as 'felt in the heart', 'carried through the air' respectively. The reason for bearing the stress contour 1-3 might be explained as a result of the tendency of stress shift mentioned in (2.4.1), or an analogy with words like ¹heart-³broken, ¹heart-³shaped, ¹heart-³stricken. In any case they are marked as exceptions to rule (II).

We have not investigated in this paper the stress distribution of words such as those listed in (66):

(66)	a.	b.
	<u>flesh-and-blood</u>	<u>over-the-counter</u>
	<u>hand-to-mouth</u>	<u>around-the-clock</u>
	<u>happy-go-lucky</u>	<u>dry-as-dust</u>
	<u>heart-to-heart</u>	<u>pepper-and-salt</u>
	<u>milk-and-water</u>	<u>play-by-play</u>
	<u>matter-of-fact</u>	<u>portal-to-portal</u>
	<u>matter-of-course</u>	<u>profit-and-loss</u>
	<u>hit-or-miss</u>	<u>rough-and-ready</u>
	<u>out-and-out</u>	<u>rough-and-tumble</u>
	<u>out-of-date</u>	<u>run-of-the-mill</u>
	<u>out-of-doors</u>	<u>spick-and-span</u>

In case of the words in (66a), main stress is assigned to the rightmost element, while it is placed on the first element with

regard to the words in (66b).

CONCLUSION

We have examined several criteria for identifying compound words. However, no single decisive criterion has yet been established for compound words as a whole. But, at a more specific level, criteria for compound adjectives has been satisfactorily well clarified in the past academic works and also in this paper. Thus, our primary concern is to investigate a stress assignment mechanism of compound adjectives along the lines laid down in this thesis.

As a result of this investigation compound adjectives are proved to be classified into two major groups with respect to stress patterns, and a further sub-classification is possible on the basis of their internal structures. Thus, one of the two groups of compound adjectives has a noun typically as the first element, while the other does not. In accordance with this distinction, we have formulated the rules capable of explaining the stress pattern 3-1 of compound adjectives such as $\begin{matrix} 3 & 1 \\ \text{easy} & \text{going} \end{matrix}$, $\begin{matrix} 3 & 1 \\ \text{icy-cold} \end{matrix}$, $\begin{matrix} 3 & 1 \\ \text{hot-blooded} \end{matrix}$ which are not given a proper explanation in SPE.

The formulation of these rules has attained a rather acceptable accomplishment for explaining the stress patterns of compound adjectives, though some exceptional cases still remain unaccounted for. Our next task will thus be to investigate in more detail the internal structure of such exceptional words so as to

incorporate them into the system of our rules. We have **also** revealed the fact that there is a stress variation in compound adjectives in English, and suggested a possibility of rhythm **stress** involved in such adjectives without presenting a **satisfactory** explanation of the phenomenon.

Appendix

Type(a): N+N+-ed with 1-3 stress pattern

<u>air-minded</u>	<u>egg-shaped</u>	<u>heart-shaped</u>
<u>almond-eyed</u>	<u>feather-brained</u>	<u>henpecked</u>
<u>ash-colored</u>	<u>finger-shaped</u>	<u>horse-faced</u>
<u>assembly-lined</u>	<u>gas-masked</u>	<u>ink-blurred</u>
<u>bowlegged</u>	<u>gimlet-eyed</u>	<u>ink-stained</u>
<u>bullnecked</u>	<u>goggle-eyed</u>	<u>king-sized</u>
<u>candle-shaped</u>	<u>goose-fleshed</u>	<u>lion-hearted</u>
<u>cloud-capped</u>	<u>grass-carpeted</u>	<u>lynx-eyed</u>
<u>dog-eared</u>	<u>harebrained</u>	<u>milk-livered</u>
<u>eagle-eyed</u>	<u>hawk-eyed</u>	<u>orange-colored</u>
<u>ox-eyed</u>	<u>saw-toothed</u>	<u>star-spangled</u>
<u>pear-shaped</u>	<u>scar-faced</u>	<u>straw-colored</u>
<u>pigeon-toed</u>	<u>sea-minded</u>	<u>streamlined</u>
<u>pigheaded</u>	<u>shop-soiled</u>	<u>swallow-tailed</u>
<u>pot-bellied</u>	<u>shovel-nosed</u>	<u>thorn-pricked</u>
<u>rabbit-hearted</u>	<u>smoke-screened</u>	<u>tooth-shaped</u>
<u>ring-necked</u>	<u>snow-capped</u>	<u>tube-shaped</u>
<u>rock-ribbed</u>	<u>speckle-faced</u>	<u>umbrella-shaped</u>
<u>rose-colored</u>	<u>spoon-fashioned</u>	<u>vase-shaped</u>
<u>sack-lined</u>	<u>square-shouldered</u>	<u>velvet-footed</u>
<u>wasp-waisted</u>	<u>wedge-shaped</u>	<u>wire-haired</u>
<u>water-colored</u>		

Type(b): N+V(pp) with 1-3 stress pattern

<u>air-borne</u>	<u>awe-struck</u>	<u>bloodstained</u>
<u>air-bound</u>	<u>awe-stricken</u>	<u>care-laden</u>
<u>armor-clad</u>	<u>bedridden</u>	<u>careworn</u>
<u>armor-plated</u>	<u>bloodshot</u>	<u>clay-built</u>

conscience-strickencream-coloredcustom-builtcustom-madeflea-bittenflyblownfogboundfootwornfrostbittenghost-hauntedsea-bornsea-borneseagirtshell-shockedship-riggedshopwornsmoke-driedsnow-boundsorrow-strickenspoon-fedtoilworntongue-tiedtongue-twistedtourist-crammedtree-cladtree-coveredtree-dottedtree-fringedvaper-filledvine-coveredwinter-beatenwire-wovegod-forsakengodgivenheartfeltheartstrickenhell-benthousebrokeniceboundice-lockedland-lockedmoon-struckstage-struckstorm-beatenstorm-boundstorm-stayedstorm-sweptstorm-tossedstove-heatedsugar-coatedsunburntsun-curedvine-cladwarwornwater-bornewater-cooledwater-lockedwater-walledwaterwornwave-beatenwave-dashedwave-tossedwonder-strickenwonder-struckmoon-strickenmoss-coveredmoss-grownmoth-eatenpanic-strickenpanic-struckpaper-boundpropeller-drivenrain-soakedrock-boundtar-dippedtar-pavedtariff-protectedtariff-raisedtear-stainedterror-strickenthought-worntime-expiredtime-honoredtimewornwave-washedweather-beatenweather-boundweather-stainedweatherwornwind-blownwind-bornewind-boundwind-shakenwind-sweptworm-eaten

Type(c): N+V+-ing with 1-3 stress pattern

awe-inspiring
bloodcurdling
breath-taking
cloud-kissing
degree-conferring
ear-deafening
earth-shaking
earth-wandering
eye-opening
face-saving

peace-loving
profit-sharing
record-breaking
soul-destroying

fact-finding
fact-fronting
faultfinding
freedom-loving
glass-gazing
God-fearing
hair-raising
hairsplitting
heartbreaking
heart-burning

soul-shaking
side-splitting
tax-collecting
thought-inspiring

heart-piercing
heart-rending
heart-warming
labor-saving
life-saving
life-giving
man-eating
mind-filling
money-making
painstaking

thought-provoking
timesaving
top-ranking
vote-getting
world-shaking

Type(d): N+A with 1-3 stress pattern

airproof
airsick
airtight
ash-pale
bedsick
blameworthy
bloodthirsty
bombproof
brainsick
bulletproof

lifelike
lifelong
lip-deep
lovelorn

burglarproof
businesslike
carefree
car-sick
childlike
coffee-brown
color-blind
deathlike
fireproof
foolhardy

lovesick
nation-wide
newsgreedy
nightlong

foolproof
footsore
fortnightly
grass-green
headlong
headstrong
heart-free
heartsick
homesick
jet-black

noteworthy
oilrich
penney-wise
pound-foolish

<u>priseworthy</u>	<u>shellproof</u>	<u>steamtight</u>
<u>purseproud</u>	<u>sidelong</u>	<u>stormproof</u>
<u>rainproof</u>	<u>skidproof</u>	<u>sunfast</u>
<u>raintight</u>	<u>skintight</u>	<u>sunproof</u>
<u>rosepink</u>	<u>slantwise</u>	<u>threadbare</u>
<u>rosered</u>	<u>slap-happy</u>	<u>top-heavy</u>
<u>rustproof</u>	<u>snow-blind</u>	<u>train-giddy</u>
<u>sea-front</u>	<u>soundproof</u>	<u>trustworthy</u>
<u>seasick</u>	<u>starlike</u>	<u>vapor-tight</u>
<u>seaworthy</u>	<u>steadfast</u>	<u>waist-deep</u>
<u>waterproof</u>	<u>watertight</u>	<u>womanlike</u>
<u>water-repellent</u>	<u>weather-wise</u>	<u>word-perfect</u>
<u>watersoluble</u>	<u>windtight</u>	

Type(e): N+V+-ing with 1-3 stress pattern

<u>day-appearing</u>	<u>night-flowering</u>	<u>sea-setting</u>
<u>day-fishing</u>	<u>night-flying</u>	<u>sea-voyaging</u>
<u>day-flying</u>	<u>night-lying</u>	<u>summer-flowering</u>
<u>day-journeying</u>	<u>ocean-going</u>	<u>summer-leaping</u>
<u>day-shining</u>	<u>picture-going</u>	<u>summer-ripening</u>
<u>law-abiding</u>	<u>sea-bathing</u>	<u>summer-staying</u>
<u>night-blooming</u>	<u>sea-blackening</u>	<u>summer-swelling</u>
<u>night-driving</u>	<u>seagoing</u>	<u>wayfaring</u>

Type(f): X+N+-ed with 1-3 stress pattern

<u>barefooted</u>	<u>blockheaded</u>	<u>draggle-tailed</u>
<u>barehanded</u>	<u>bluebelled</u>	<u>harebrained</u>
<u>bareheaded</u>	<u>bluecoated</u>	<u>highbrowed</u>
<u>barelegged</u>	<u>brazen-faced</u>	<u>hollow-eyed</u>
<u>bigwigged</u>	<u>cockeyed</u>	<u>hot-spurred</u>
<u>birdbrained</u>	<u>crackbrained</u>	<u>hunchbacked</u>
<u>black-hearted</u>	<u>cross-eyed</u>	<u>knock-kneed</u>
<u>blacklegged</u>	<u>dimwitted</u>	<u>long-haired</u>

<u>lop-eared</u>	<u>popeyed</u>	<u>sway-backed</u>
<u>loudmouthed</u>	<u>prick-eared</u>	<u>teen-aged</u>
<u>palefaced</u>	<u>red-headed</u>	<u>thickheaded</u>
<u>pig-headed</u>	<u>shortheaded</u>	<u>yellow-bellied</u>
<u>pigtailed</u>	<u>soreheaded</u>	

Type(g): Adv+V(+-ing) with 1-3 stress pattern

<u>bygone</u>	<u>incoming</u>	<u>oncoming</u>
<u>downcast</u>	<u>indrawn</u>	<u>ongoing</u>
<u>downfallen</u>	<u>ingrowing</u>	<u>onlooking</u>
<u>downgrade</u>	<u>ingoing</u>	<u>outlying</u>
<u>downtrodden</u>	<u>inrushing</u>	<u>outgoing</u>

Type(h): A+A with 3-1 stress pattern

<u>all-out</u>	<u>double-quick</u>	<u>old-womanish</u>
<u>all-round</u>	<u>executive-legislative</u>	<u>red-blind</u>
<u>bat-blind</u>	<u>fifty-fifty</u>	<u>red-brown</u>
<u>bittersweet</u>	<u>German-Jewish</u>	<u>red-hot</u>
<u>blue-black</u>	<u>German-Russian</u>	<u>second-best</u>
<u>bluish gray</u>	<u>heavy-thick</u>	<u>shabby-genteel</u>
<u>coldproof</u>	<u>honest-true</u>	<u>silver-gray</u>
<u>dark blue</u>	<u>icy-cold</u>	<u>social-democratic</u>
<u>dark brown</u>	<u>light-blue</u>	<u>social-economic</u>
<u>deaf-mute</u>	<u>light-green</u>	<u>straightforward</u>
<u>sure-enough</u>	<u>true-blue</u>	<u>worldly-wise</u>
<u>Swedish-American</u>	<u>white-hot</u>	<u>yellow-green</u>

Type(i): A+N+-ed with 3-1 stress pattern

<u>able-bodied</u>	<u>black-eyed</u>	<u>broken-hearted</u>
<u>absent-minded</u>	<u>blue-blooded</u>	<u>brown-eyed</u>
<u>barefaced</u>	<u>blue-eyed</u>	<u>clear-headed</u>
<u>bat-eyed</u>	<u>broadgauged</u>	<u>clear-sighted</u>
<u>big-hearted</u>	<u>broad-minded</u>	<u>close-fisted</u>

close-mouthed
close-lipped
coarse-grained
cold-blooded
cross-legged
double-barreled
double-breasted
double-chinned
double-edged
double-faced

flat-nosed
flat-roofed
flaxen-haired
foul-minded
foul-mouthed
four-footed
freehanded
fresh-colored
frosty-haired
full-blooded

hardwooded
heavy-hearted
high-aimed
high-colored
high-handed
high-heeled
high-keyed
high-mettled
high-minded
high-pitched

ill-sorted
ill-starred

double-tongued
downhearted
empty-handed
empty-headed
even-handed
even-minded
even-tempered
evil-affected
evil-minded
evil-starred

full-bodied
full-faced
full-fashioned
full-hearted
full-mouthed
gentle-mannered
giddy-brained
gilt-edged
good-hearted
good-humored

high-priced
high-spirited
high-toned
hoary-headed
hollow-cheeked
hollow-hearted
hollow-toned
horny-fingered
hot-blooded
hot-brained

ill-suited
ill-tempered

faint-hearted
faint-voiced
fair-haired
fair-minded
fair-skinned
false-hearted
far-sighted
feeble-minded
firm-rooted
flat-bottomed

good-natured
good-tempered
great-hearted
half-hearted
half-witted
hard-fisted
hard-grained
hard-headed
hard-hearted
hard-shelled

hot-headed
hot-tempered
ill-advised
ill-affected
ill-conditioned
ill-fated
ill-favored
ill-founded
ill-humored
ill-natured

ill-timed
ill-willed

kind-heartedlarge-handedlarge-mindedlarge-heartedleft-handedlevel-headedlight-footedlight-heeledlight-headedlight-heartednew-fashionednimble-fingerednimble-footednimble-wittednoble-mindedold-fashionedone-sidedopen-armedopen-earedopen-eyedright-mindedrosy-cheekedrough-manneredround-shoulderedshamefacedsharp-angledsharp-earedsharp-edgedsharp-eyedsharp-nosedsingle-heartedsingle-mindedlight-mindedlong-earedlong-facedlong-headedlong-leggedlong-limbedlong-sightedlong-tonguedloose-jointedloose-tonguedopen-handedopen-heartedopen-mouthedopen-toppedoutmodedoval-facedoval-shapedpermanent-wavedpublic-mindedquick-eyedsharp-pointedsharp-wittedshort-datedshort-handedshort-leggedshort-sightedshort-temperedshort-waistedshort-windedshrewd-brainedsleepy-eyedslim-waistedlow-mindedlow-neckedlow-pitchedlow-spiritedmad-brainedmealy-mouthedmean-spiritedmiddle-agednarrow-mindednewfangledquick-scentedquick-sightedquick-temperedquick-wittedrawbonedred-bloodedred-handedred-neckedrich-brestedrich-voicedshrewd-headedshrill-tonedshrill-voicedsilver-hairedsilver-tonguedsimple-heartedsingle-breastedsingle-eyedsingle-floweredsingle-handedslow-wittedsmall-minded

smooth-faced
smooth-tongued
sober-minded
soft-headed
soft-hearted
soft-shelled
sore-eyed
stiff-necked
stony-hearted
stout-hearted

tough-muscled
tough-sinewed
true-hearted
two-edged
two-faced
two-fisted
two-handed
two-tongued
warm-blooded
warm-hearted

yellow-legged

straight-faced
strong-hearted
strong-minded
strong-willed
sure-footed
sweet-scented
sweet-tempered
swift-footed
swift-handed
tender-eyed

weak-headed
weak-kneed
weak-minded
weak-sighted
wet-eared
white-handed
white-headed
white-livered
whole-hearted
wide-eyed

yellow tailed

tender-hearted
thick-brained
thick-necked
thick-skinned
thick-skulled
thick-witted
thin-skinned
tight-fisted
tight-lipped
tough-faced

wooden-shoed
worldly-minded
wrong-directed
wrong-headed
wrong-minded
wrong-timed
wry-faced
wry-mouthed
yellow-breasted
yellow-eyed

yellow-throated

Type(j): Adv+V(pp) with 3-1 stress pattern

all-abhorred
basebred
clean-cut
clear-shaved
deep-seated
deep-set
deep-voiced
downtrodden
fair-spoken

far-famed
far-fetched
far-flung
fine-drawn
first-born
free-spoken
full-fledged
full-grown
half-baked

half-boiled
half-bred
hard-boiled
hard-dried
hard-pressed
hard-worked
heavy-armed
heavy-laden
high-bitten

high-flown
high-strung
ill-bred
ill-considered
ill-disposed
ill-gotten
ill-informed
ill-judged
ill-mannered
ill-matched

soft-boiled
soft-spoken
trueborn
truebred
underbred
underdone
underfed
well-advised
well-appointed
well-armed
well-handled
well-informed
well-intentioned
well-judged
well-kept
well-known

ill-spent
light-armed
long-awaited
long-drawn
long-lived
long-winded
lowborn
lowbred
outspoken
outworn

well-balanced
wellborn
well-bred
well-chosen
well-conducted
well-connected
well-contented
well-cooked
well-defined
well-disposed
well-made
well-mannered
well-ordered
well-preserved
well-proportioned
well-read

overblown
overladen
overwrought
quick-frozen
rough-hewn
roughshod
rough-spoken
rough-wrought
smooth-shaven
smooth-spoken

well-dressed
well-earned
well-educated
well-favored
well-fed
well-fixed
well-founded
well-furnished
well-groomed
well-grounded
well-set
well-spoken
well-suited
well-timed
well-worn
well-spread

Type(k): Adv+V+-ing with 3-1 stress pattern

easy-going
ever-changing
everlasting
far-reaching

far-seeing
fast-moving
forthcoming
good-looking

hard-working
highflying
high-sounding
ill-faring

<u>ill-judging</u>	<u>overwhelming</u>	<u>sweet-smelling</u>
<u>long-standing</u>	<u>quick-cooking</u>	<u>well-sounding</u>
<u>long-suffering</u>	<u>quick-selling</u>	<u>wide-spreading</u>
<u>loose-fitting</u>	<u>slow-moving</u>	<u>well-looking</u>

Type(l): N+V(pp) with 3-1 stress pattern

<u>earth-bound</u>	<u>heaven-given</u>	<u>homemade</u>
<u>hand-picked</u>	<u>heaven-made</u>	<u>house-bound</u>
<u>hand-sewn</u>	<u>heaven-taught</u>	<u>native-born</u>
<u>heaven-accepted</u>	<u>home-based</u>	<u>man-made</u>
<u>heaven-begot</u>	<u>homeborn</u>	<u>shore-based</u>
<u>heaven-descended</u>	<u>homebound</u>	<u>ski-bound</u>
<u>heaven-dyed</u>	<u>home-bred</u>	<u>space-stabilized</u>
<u>heaven-fallen</u>	<u>homegrown</u>	<u>war-blinded</u>
<u>heaven-forsaken</u>		

Type(m): X+V+-ing with 3-1 stress pattern

<u>all-affecting</u>	<u>self-deluding</u>	<u>self-pleasing</u>
<u>all-destroying</u>	<u>self-elevating</u>	<u>self-propelling</u>
<u>all-seeing</u>	<u>self-filling</u>	<u>self-rising</u>
<u>all-shaking</u>	<u>self-finding</u>	<u>self-supporting</u>
<u>double-dealing</u>	<u>self-killing</u>	<u>self-sustaining</u>
<u>self-advertising</u>	<u>self-mocking</u>	<u>well-being</u>
<u>self-closing</u>	<u>self-organizing</u>	<u>well-meaning</u>
<u>self-denying</u>		

Exceptions

3 1

A+N type:

<u>all-American</u>	<u>first-hand</u>	<u>front-page</u>
<u>backstage</u>	<u>first-rate</u>	<u>full-scale</u>
<u>backstair</u>	<u>foursquare</u>	<u>full-time</u>
<u>big-time</u>	<u>free-soil</u>	<u>general-purpose</u>
<u>first-class</u>	<u>freewill</u>	<u>high-fidelity</u>

high-frequencyhigh-gradehigh-octanehigh-pressurehigh-speedhigh-tensionhot-waterill-bodinglarge-scaleleft-wingred-lightright-winground-tripsecond-handshort-rangeshort-termshort-wavesingle-entrylong-distancemiddle-classnarrow-gaugeoff-coloroffhandoffshoreoffsideoffstageold-hatold-linesingle-trackslow-motionsmall-timesoft-shoethird-classthird-ratethree-piecethree-plyold-schoolold-worldone-horseopen-airopen-dooroverseaoversizepublic-schoolpublic-utilityrear-endthree-quartertwo-piecetwo-wayupper-classwhite-collarwhite-slavewhole-lengthwhole-wheat

1 3

A+N type:

all-timebackdooreverydayfair-weatherfreehandfresh-watergreen-beltnext-doormadcaplow-pressureloose-leafhigh-schoolone-timeone-trackoutboardoverhandoverheadoverlandovernightround-tablesixpennystill-lifethree-color

1 3

N+N type:

air-linebird's-eyeborderlinebox-officecastor-oilpeacetime

post-office
side-wheel
space-writer

sugar-loaf
switch-blade

turtle-neck
water-power

3 1
 N+A type:

blood-red
brand-new
duty-free
fancy-free
milk-white
letter-perfect
knee-high
knee-deep
ice-free

honeysweet
nutbrown
pea-green
penny-wise
pitch-dark
point-blank
post-free
sea-green
skin-deep

skintight
sky-blue
sky-high
snow-white
steel-blue
stockstill
stone-blind
stone-deaf

Flesh-and-blood type with 3-1 stress pattern:

flesh-and-blood
hand-to-mouth
happy-go-lucky
heart-to-heart
milk-and-water
matter-of-fact
matter-of-course
hit-or-miss
out-and-out
out-of-date

out-of-doors
over-the-counter
penny-a-line
pepper-and-salt
play-by-play
portal-to-portal
profit-and-loss
rough-and-ready
rough-and-tumble
run-of-the-mill

spick-and-span
to-and-fro
touch-and-go
under-the-counter
up-and-coming
up-and-down
up-to-date
well-to-do
word-for-word

Around-the-clock type with 1-3 stress pattern:

around-the-clock
dry-as-dust

free-for-all
house-to-house

out-of-the-way

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