

熊本大学大学院文学研究会発行

KUROKAMI REVIEW 第4号 (昭和56年10月) 抜刷

Stress Rules for Compound Adjectives in English

Yamada, Eiji. 1981. "Stress Rules for
Compound Adjectives in English."

Kurokami Review 4: 33-49.

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Stress Rules for Compound Adjectives in English

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

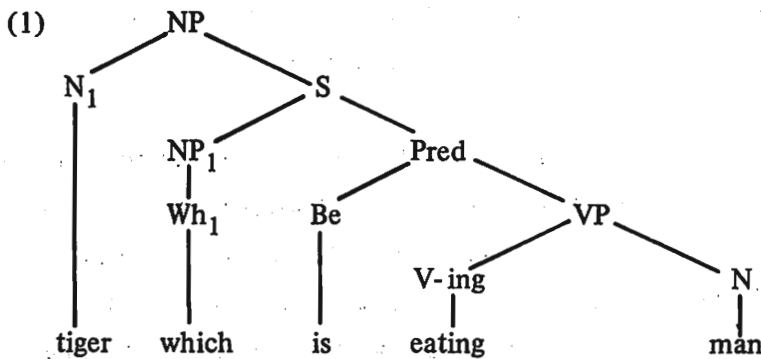
1.0. In the framework of *SPE* a clear definition of compounds is not attempted; Chomsky and Halle only treat the words with 1-3 stress pattern as compounds, and those with other stress pattern as phrases. Indeed, as Jespersen states, if we stuck to the criterion of stress, we should have to refuse the name of compound to a large group of two-linked phrases that are generally called so, such as *headmáster* or *stòne wáll* (Jespersen 1942: Part VI, p. 135). Thus, it is apparently misleading to use only stress as a criterion for establishing the status of compound. We will adopt here 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. With the aid of this view we can properly treat typical stress pattern of compound adjectives such as ³*easy-going*, ³*icy-cold* and ³*high-born* within the scope of our present study.

1.1.0. 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 ¹*cock-eyed*, ¹*pigeon-toed*; the other is the type which shares 3-1 stress pattern as ³*icy-cold*, ³*high-flown*. In Marchand (1969: 29) the 3-1 stress contour is referred to as the basic stress pattern which is observed with regard to the stress assignment of compound adjectives.

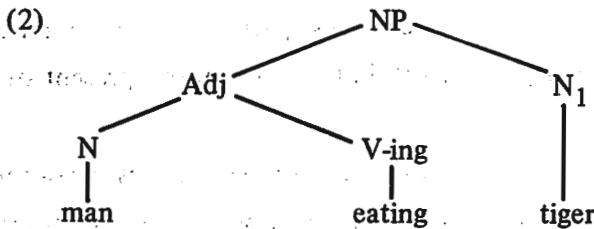
In the course of the ensuing discussion, however, it is revealed that there are a

large amount of exceptional compound adjectives which have 1-3 stress pattern. Hence, we will here make clear what factors may function in differentiating 1-3 pattern from 3-1 pattern of compound adjectives through analysis of the surface structure of each type.

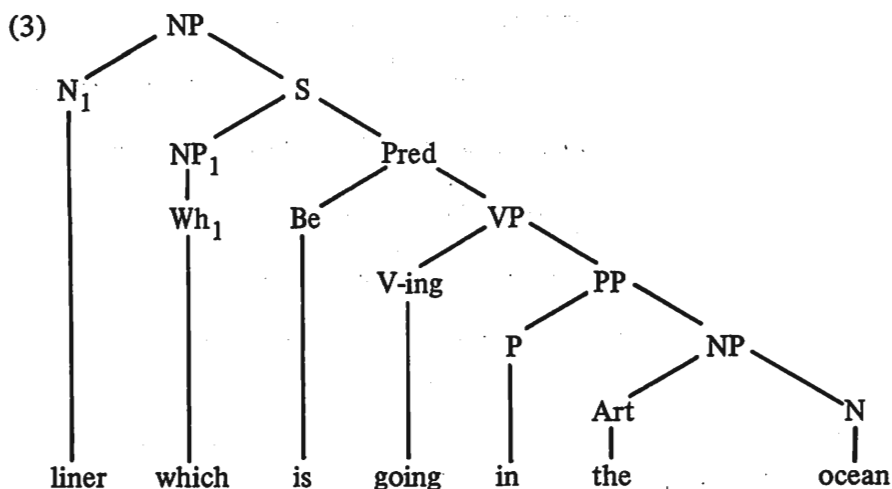
1.1.1. Before entering into the classification of words, we must here clarify the distinction of the terms 'surface structure' and 'underlying deep structure' of compound adjectives. Consider first the word *man-eating tiger*. The underlying construction of this compound can be represented as:



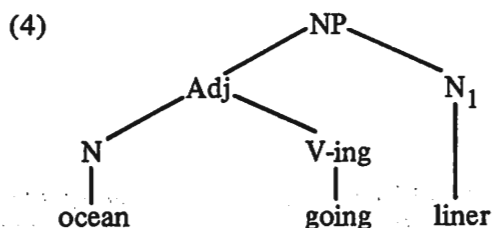
The structure of the compound as shown in (2) is assumed to be derived from the underlying structure (1) above (cf. Meys 1975: 132):



The deep structure of the compound word *ocean-going liner* is more complicated as represented in diagram (3) (cf. Meys 1975: 145):



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



Thus, the words *man-eating* and *ocean-going* have apparently the same surface structure and the identical stress pattern 1-3 in spite of their different underlying syntactic construction. Indeed, it is not the underlying structure but the surface structure that determines directly the placement of stress. 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 we will formulate in principle stress rules based on the information obtained from the surface structure.

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

- (5) a. N+N+ed (¹cock-³eyed, ¹pigeon-³toed, ¹ring-³necked)¹
 b. N+V(pp) (¹heart-³broken, ¹moth-³eaten, ¹tongue-³tied)
 c. N+V+ing (¹heart³breaking, ¹heart³trending, ¹earth-³shaking)
 d. N+A (¹color-³blind, ¹blood³thirsty, ¹water-³tight)
 e. N+V+ing (¹ocean-³going, ¹day-³flying, ¹sea-³going)
 f. Adv+V(+ing) (¹on³coming, ¹in³rushing, ¹down³cast)

Notice here that although type (5c) and type (5e) 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 (1.2.5).

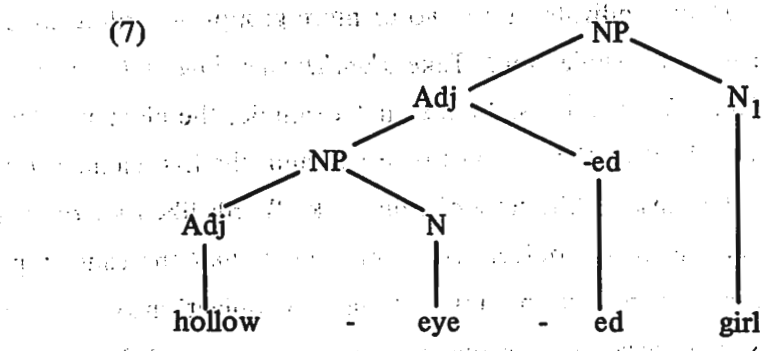
1.2.1. Type (5a): ¹N+³N+ed

- | | | |
|-----|-----------------------|---------------------|
| (6) | a. | b. |
| | <i>air-minded</i> | <i>humpbacked</i> |
| | <i>barefooted</i> | <i>milk-livered</i> |
| | <i>bow-legged</i> | <i>pigeon-toed</i> |
| | <i>cockeyed</i> | <i>pot-bellied</i> |
| | <i>crackbrained</i> | <i>prick-eared</i> |
| | <i>draggle-tailed</i> | <i>ring-necked</i> |
| | <i>eagle-eyed</i> | <i>ring-tailed</i> |
| | <i>hollow-eyed</i> | <i>rose-colored</i> |
| | | <i>sway-backed</i> |
| | | <i>barebrained</i> |
| | | <i>bareheaded</i> |
| | | <i>knock-kneed</i> |
| | | <i>palefaced</i> |
| | | <i>pig-headed</i> |

All of the examples in (6a) have the structure of noun+noun +ed with 1-3 stress pattern. According to Kenyon and Knott (1953), words in (6b) such as *barefooted*, *barebrained*, *knock-kneed* have all 3-1 stress pattern, while in *The Random House Dictionary of the English Language* (1966, henceforth *RHD*) these words are given 1-3 stress pattern. Indeed, this 1-3 stress pattern has explanatory adequacy rather than 3-1 stress pattern in terms of internal structure of words in this type (5a). This point will be discussed later in (2.2).

A close examination on these words reveals another interesting fact; historically

they are all made of so called 'bahuvrihi.' 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: ¹*bare*³*head+ed*, ¹*knock*³*knee+ed*, ¹*pig*³*head+ed*.² These bahuvrihi compounds also have 1-3 stress pattern in isolation like ¹*knock*³*knee*. Then, we may assume that this 1-3 stress pattern has been kept unchanged to produce 1-3 stress pattern when this type of compound nouns like ¹*knock*³*knee* became compound adjective with addition of +*ed*. In view of this fact, we can easily predict the stress pattern of words such as *palefaced* from its internal make-up ¹*pale*³*face+ed*, although the word is composed of not N+N+*ed* but Adj+N+*ed*. Therefore, we may tentatively set up *ad hoc* condition to this categorization of words into type (5a) that even if the word structure is not analyzed as N+N+*ed*, words with bahuvrihi construction equally belong to N+N+*ed* type with regard to stress pattern. For example, since the word *hollow-eyed* with Adj+N+*ed* structure shows bahuvrihi construction as in the surface structure (7) below, it belongs to type (5a) with regard to stress pattern 1-3:



1.2.2. Type (5b): ¹N+³V(pp)

- (8) *conscience-stricken* *time-honored*
heart-broken *tongue-tied*
moth-eaten

The examples of this type all have the structure noun+verb (past-participle) and the stress pattern 1-3.

1.2.3. Type (5c): ³N+V+ing

- | | | | |
|-----|--------------------------|-----------------------|------------------------|
| (9) | <i>awe-inspiring</i> | <i>fact-fronting</i> | <i>life-giving</i> |
| | <i>breath-taking</i> | <i>freedom-loving</i> | <i>mind-filling</i> |
| | <i>cloud-kissing</i> | <i>God-fearing</i> | <i>soul-destroying</i> |
| | <i>degree-conferring</i> | <i>heartbreaking</i> | <i>tax-collecting</i> |
| | <i>earth-shaking</i> | <i>heart-piercing</i> | |
| | <i>face-saving</i> | <i>heartrending</i> | |

All examples here are composed of noun+verb+ing with 1-3 stress pattern.

1.2.4. Type (5d): N+A ^{1 3}

- | | | | |
|------|---------------------|----------------------|------------------------|
| (10) | <i>bloodthirsty</i> | <i>love-sick</i> | <i>purpose-proud</i> |
| | <i>color-blind</i> | <i>newsgreedy</i> | <i>shock-resistant</i> |
| | <i>fire-proof</i> | <i>oil-rich</i> | <i>snow-blind</i> |
| | <i>fool-proof</i> | <i>penny-wise</i> | <i>water-tight</i> |
| | <i>footsore</i> | <i>proud-foolish</i> | |

The examples of this type consist of noun+adjective with 1-3 stress pattern. This type of words 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* for 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 of this type because these two groups have the same 1-3 stress pattern and are classified into the same type (5d) under the present system.

1.2.5. Type (5e): N+V+ing ^{1 3}

- | | | | |
|------|------------------------|-----------------------|-------------------------|
| (11) | <i>day-flying</i> | <i>man-eating</i> | <i>sea-going</i> |
| | <i>earth-wandering</i> | <i>night-blooming</i> | <i>soul-shaking</i> |
| | <i>glass-gazing</i> | <i>night-flying</i> | <i>summer-flowering</i> |
| | <i>law-abiding</i> | <i>ocean-going</i> | <i>wayfaring</i> |
| | <i>life-giving</i> | <i>picture-going</i> | |

The examples of this type have the structure noun+verb+ing with 1-3 stress pat-

tern. Words like *summer-flowering* and *wayfaring* appear not to be a member of the same type because their internal structures can be regarded as N+N+ing, N+Adv+ing respectively. 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 on the distribution of the main stress of compound adjectives, as will be discussed later in this paper.

Notice also that the first element of words like *man-eating* and *ocean-going* has different properties in the deep structure although each is treated as a noun in the surface structure; *man* functions as accusative in the light of grammatical relation with *eating*, on the other hand, *ocean* as locative. 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 them with the help of information from the surface structure of such words.

Therefore, we must now recall the discussion in (1.2.0), in which we have differentiated the words such as *heartbreaking*, *earthshaking* from those like *ocean-going*, *day-flying* and classified them into two types (5c) and (5e). However, classification of the words into two types appears to be unnecessary in view of the discussion thus far. But, for ease of reference in this paper, we leave them as they are.

1.2.6. Type (5f): Adv+V(+ing)

(12) *oncoming* *inrushing* *downcast*

The examples above have the structure adverb+verb(+ing) with the stress pattern 1-3, which is identical with that of the other types from (5a) to (5e), but the only exceptional case in respect to the structure, for the first element of this type is adverb instead of noun. However, each element within words like *oncoming*, *inrushing* and *downcast* has a close syntactic relation each other, 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 into 1-3 type that if a close relation can be recognized in the structure of adverb-verb combination, the main stress of such words falls on the first element as *oncoming*.

1.2.7. To sum up the discussion of 1-3 stress pattern of compound adjectives thus far, the rule for stress assignment in such words will be stated as follows:

- (13) 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 first element even when it is not a noun.

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

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

As stated earlier, 3-1 stress pattern is a fundamental one of compound adjectives. Indeed, words of this type are numerous and very productive. Accordingly, it will suffice to take up only fifteen instances in each sections in (1.3) from among copious amount of such words for the following discussions.

1.3.1. Type (14g): ³ A+¹ A

- (15) *bittersweet* *lukewarm*
blue-black *phonetic-syntactic*
comparative-synchronic *psychological-religious*

<i>deaf-mute</i>	<i>red-hot</i>
<i>executive-legislative</i>	<i>social-economic</i>
<i>German-Russian</i>	<i>white-hot</i>
<i>heavy-thick</i>	<i>worldly-wise</i>
<i>icy-cold</i>	

The structure of this type of examples is adjective+adjective with 3-1 stress pattern. It is interesting to note that although all the -o- forms like *Anglo-*, *socio-*, *politico-* have the corresponding adjectives such as *English*, *social*, *political* respectively, the -o- forms are employed instead of such independent adjectival forms when combined with another adjectives to form compound adjectives. Quirk *et al.* (1972: 1028) regard 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).

1.3.2. Type (14h): A+N+ed

(16)	<i>chicken-hearted</i>	<i>iron-hearted</i>	<i>open-hearted</i>
	<i>hard-fisted</i>	<i>light-footed</i>	<i>public-spirited</i>
	<i>hard-headed</i>	<i>long-legged</i>	<i>swift-footed</i>
	<i>high-minded</i>	<i>low-browed</i>	<i>three-legged</i>
	<i>hot-blooded</i>	<i>mealy-mouthed</i>	<i>wrong-headed</i>

All examples of this type consist of adjective+noun+ed with 3-1 stress pattern. Numerals in words like *three-legged*, *two-legged*, *four-footed* are considered as adjectives, for numerals within a word show the same function as adjectives in placement of main stress. Thus 3-1 stress pattern is also observed in the compound adjectives of this type. 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 assume the pressure of rhythm rule under embedding: ¹*hard-headed* ³*men*, ¹*hot-blooded* ³*Gods* and ¹*mealy-mouthed* ³

¹phrases (cf. Liberman and Prince 1977: 309). This point will be further discussed in (2.4).

1.3.3. Type (14i): A+V(pp) ^{3 1}

(17)	<i>all-abhorred</i>	<i>high-flown</i>	<i>low-bred</i>
	<i>clean-cut</i>	<i>high-strung</i>	<i>low-born</i>
	<i>far-fetched</i>	<i>ill-bred</i>	<i>quick-frozen</i>
	<i>first-born</i>	<i>ill-gotten</i>	<i>true-born</i>
	<i>high-bitten</i>	<i>ill-spent</i>	<i>widespread</i>

The examples of this type all have the construction adjective+verb (past-participle), and the stress pattern is 3-1.

1.3.4. Type (14j): A+V+ing ^{3 1}

(18)	<i>easy-going</i>	<i>high-flying</i>	<i>quick-cooking</i>
	<i>far-reaching</i>	<i>high-sounding</i>	<i>quick-setting</i>
	<i>far-seeing</i>	<i>ill-faring</i>	<i>sweet-smelling</i>
	<i>good-looking</i>	<i>ill-judging</i>	<i>well-sounding</i>
	<i>hard-working</i>	<i>odd-looking</i>	<i>wide-spreading</i>

These examples consist of adjective+verb+ing with 3-1 stress pattern.

1.3.5. Type (14k): N+V(pp) ^{3 1}

(19)	<i>heaven-born</i>	<i>heaven-fallen</i>	<i>homebound</i>
	<i>heaven-accepted</i>	<i>heaven-forsaken</i>	<i>home-bred</i>
	<i>heaven-begot</i>	<i>heaven-given</i>	<i>homegrown</i>
	<i>heaven-descended</i>	<i>heaven-made</i>	<i>homemade</i>
	<i>heaven-dyed</i>	<i>heaven-taught</i>	<i>man-made</i>

All examples of this type have the structure of noun+verb (past-participle), which may suggest the possibility to be grouped in type (5b) like words as *heart-broken*, *moth-eaten*, *tongue-tied*, the first element of words being analyzed into noun. Nevertheless, 3-1 pattern of stress is actually assigned to them. We must therefore regard them as exception. Note here that the function of the first element in type

(5b) differs from that in type (14k); in fact, the first element of all words in type (14k) functions as ablative (cf. *heaven³-born¹*) or locative (cf. *home³-bred¹*) in the light of syntactic relation within the whole word, while the first element in type (5b) functions as object (cf. *conscience¹-stricken³*) or subject (cf. *moth¹-eaten³*). For this reason, we can distinguish type (14k) from type (5b); words with N+V(pp) construction, if the first element functions as ablative⁴ within the whole word, are grouped into type (14k) and receive primary stress on the second element, while others fall under type (5b).

1.3.6. Type (14l); X³+V¹+ing

(20)	<i>all-affecting</i>	<i>self-denying</i>	<i>self-propelling</i>
	<i>all-destroying</i>	<i>self-filling</i>	<i>self-rising</i>
	<i>all-seeing</i>	<i>self-finding</i>	<i>self-sustaining</i>
	<i>self-advertising</i>	<i>self-killing</i>	<i>well-being</i>
	<i>self-closing</i>	<i>self-pleasing</i>	<i>well-meaning</i>

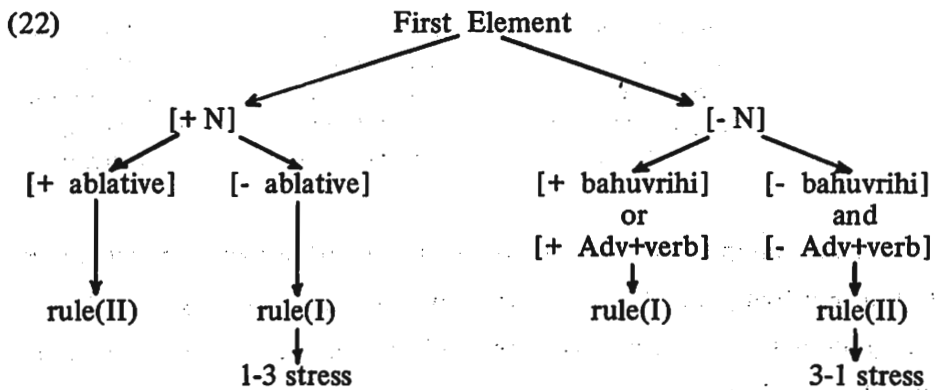
These examples are all composed of adverb+verb+ing or adjective+verb+ing or pronoun+verb+ing and have 3-1 stress pattern. The cover-symbol X stands for the three grammatical categories adjective, adverb, and pronoun other than noun because our rule, which will be shown later, functions properly if the fact that the first element of words is not a noun is only indicated.

1.3.7. The discussion in (1.3) 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 (14k).

2.1. In case of words with 1-3 stress pattern, as mentioned in (1.2.7), the first element takes an important role in placing 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 (1.2.7) and (1.3.7) in mind, we can make the following statements with regard to the stress assignment of compound adjectives:

- (21) 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 close adverb-verb construction even when it is not a noun.

Moreover, these facts are illustrated diagrammatically in (22) to show the internal relation of each element:



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

$$(23) \text{ (I)} \quad \left[\begin{array}{c} 1 \text{ stress} \\ \vee \end{array} \right] \rightarrow [1 \text{ stress}] / [## (X_Y)_F ## Z ##] _A$$

Conditions: a. $F = N$

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

$$\text{(II)} \quad \left[\begin{array}{c} 1 \text{ stress} \\ \vee \end{array} \right] \rightarrow [1 \text{ stress}] / [## P ## X_Y ##] _A$$

Conditions: a. $P = \sim N$

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

In these rules, F stands for 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*, *overbold*, *palefaced*, *homebound* as examples. The word *cock-eyed* belongs to type (5a), which shows that the structure is N+N+ed. Condition (a) in rule (23 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 (23 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 bahuvirihī noun (cf. 23 Ib). The word *homebound* receives 3-1 stress pattern (cf. 23 IIb) because the first element functions as ablative within the whole word. Although the word *overbold* does not belong to any type (5a) through (14l), 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 rule has attained a rather acceptable stage; in other words, our rules, which are established by means of rather limited number of compound adjectives (i.e. words listed in (5)-(20)), are capable of explaining many other words like *overbold*, *underbred* and *underdone* which are not included in our corpus.

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

(24)	¹ <i>bow</i> ³ <i>-legged</i>	¹ <i>hare</i> ³ <i>-brained</i>	¹ <i>pig</i> ³ <i>-headed</i>
	(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. The stress pattern 1-3 indicated here follows from *RHD*. In Kenyon and Knott (1953), however, the words in question have the reverse 3-1 stress pattern. One possible explanation for this difference of stress pattern is to assume that main stress has shifted forward in ten years or so. Indeed, 1-3 stress pattern rather than 3-1 is adequate to our rule (I, II), for the first element of those words is a noun but not other grammatical categories. If it is really ascertained with 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 can also explain in the same way other exceptional cases such as listed in (25a):

(25)	a.	b.
	<i>barefooted</i>	<i>high-born</i> <i>barefaced</i>
	<i>barehanded</i>	<i>high-bred</i> <i>barefisted</i>
	<i>bareheaded</i>	<i>thick-headed</i>
	<i>far-reaching</i>	<i>two-faced</i>

As the words in (25a) consist of A+N+ed (or ing), 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 the first element of them is not a noun. On the contrary, the words in (25b) remain unaffected of the shift, though the reason is unknown. Thus, if the stress shift is established as a far-reaching tendency, these exceptional cases will be given a satisfactory account. At present, however, this view has much room for doubt and improvement.

2.3. Compound adjectives may be used in two ways: that is, predicative and attributive. We have thus far confined our discussion to the cases in which compound adjectives are used as predicative. However, a large amount of words in attributive use are instanced as in (26), some of which are subject to rhythm stress rule and main stress is shifted thus forward (cf. Kenyon 1924: 92):

(26)	¹ ³ ¹ ³ ¹	<i>easy-going man</i> (<i>easy-going</i>)
	¹ ³ ¹ ³ ¹	<i>hard-bitted horse</i> (<i>hard-bitted</i>)
	¹ ³ ¹ ³ ¹	<i>high-flown speech</i> (<i>high-flown</i>)
	¹ ³ ¹ ³ ¹	<i>high-strung nerves</i> (<i>high-strung</i>)
	¹ ³ ¹ ³ ¹	<i>homebred milk</i> (<i>homebred</i>)
	¹ ³ ¹ ³ ¹	<i>low-lifted fellow</i> (<i>low-lifted</i>)

¹ ³ ¹ ³ ¹
low-lined face (low-lined)

¹ ³ ¹ ³ ¹
quick-witted man (quick-witted)

The stress pattern of the words in parentheses shows when they are used in isolation. The question is under what conditions this rhythm stress rule operates since rhythm stress does not always impose stress shift upon the words with 3-1 stress pattern. Thus, some like *mealy-mouthed expression* retain 3-1 stress pattern, 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*. However, the rhythm rule, which usually operates in attributive use of compound adjectives, is not yet fully established at present and entails rather complicated formalism. For this reason, we have confined our discussion to the predicative type of compound adjectives.

2.4. As was mentioned in (1.1.1), stress assignment of compound adjectives is guided by the surface structure. We have followed this view in principle. However, information from the deep structure has been introduced into the formulation of rule (I, II); that is, condition (b) in rule (23 I) and condition (b) in rule (23 II). Strictly speaking, since these two conditions may not belong to rule (I, II) but a readjustment rule, it may be adequate for them to be excluded from rule (I, II), though in our present system they are included in the same rule for ease of exposition.

2.5. Finally, some exceptional words which cannot be classified into any types are presented here:

(27)

a.

b.

¹ ³
uncalled-for

³ ¹
life-size

¹ ³
heart-felt

¹ ³
unheard-of

³ ¹
up-to-date

¹ ³
air-borne

¹ ³
unhoped-for

¹ ³
ever-green

A satisfactory explanation is not given in this paper to all the examples cited above in (27a). The words *heart-felt* and *air-borne* with 1-3 stress pattern in (27b) are exception to rule (II) since their first element functions as locative (or ablative) such as

'felt in the heart,' 'carried through the air' respectively. The reason for bearing 1-3 stress contour might be explained as a result of the tendency of stress shift mentioned in (2.2), or an analogy with such word as *heart-broken*, *heart-shaped*, *heart-stricken*. In any case they are marked as exception to rule (II).

3.1. To sum up the arguments given in this paper, compound adjectives are classified into two groups according to the difference of stress patterns. One has a noun typically as the first element, while the other does not. In accordance with this distinction, we have formulated the rules, which are capable of explaining the stress type 3-1 for compound adjectives such as *icy-cold*, *high-born* and *hot-blooded*, which are not given a proper explanation in *SPE*.

We have also examined the possibility of stress shift and rhythm stress for compound adjectives, though we have not presented satisfactory statement on these matters.

Notes

1. In the analysis of structure of these words we followed the description of *OED* not to analyze them into N+V+ed.
2. 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.'
3. As we will treat these words in the framework of *SPE*, even stress or double stress such as *icy-cold*, *bittersweet* is regarded as 3-1 stress such as *icy-cold*, *bittersweet*.
4. 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.

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