

A Fine-Grained Approach to “Double-Barreled” Adjectives

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A fine-grained approach to “double-barreled” adjectives

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I regret to see that vile and barbarous vocable *talented*, stealing out of the newspapers into the leading reviews and most respectable publications of the day. Why not *shillinged*, *farthinged*, *tenpenced*, etc.? The formation of a participle passive from a noun, is a licence that nothing but a very peculiar felicity can excuse. . . . Most of these pieces of slang come from America.

— Coleridge, *Table Talk* (1837), quoted in Hirtle (1970)

The construction that upset Coleridge is in fact ancient and pervasive (Jespersen, 1942, Hirtle, 1970). Many instances of it in modern English, unlike *talented*, are compounds, with an adjective or noun modifier preceding the noun to which *-ed* is suffixed, as in (1):

- (1) green-eyed, warm-blooded, six-legged, snub-nosed, narrow-minded, marble-floored, rubber-soled, double-barreled, many-splendored

It is apparent that the suffix *-ed* in these adjectives is not the inflectional *-ed*, but a derivational morpheme affixed to nominals, as the nonexistence of the verbs *to blood*, *to leg*, *to nose*, *to splendor*, etc. attests. Even when a homophonous verb-noun pair exists, this construction is demonstrably distinct from the participial adjective – a *light-skinned* person is not a *skinned* person (Hirtle, 1970), and the modifier of a participle is adverbial, not adjectival, as the contrasts in (2) show:

- (2) *warmly/warm blooded animals, *narrowly/narrow minded people
(*cf.* competently/*competent staffed agencies)

Although the process forming these double-barreled adjectives seems fairly productive, there are clear constraints on the kinds of nouns and modifiers that produce admissible compounds of this sort. I will discuss two sets of constraints in this paper, the first semantic and the second morphological.

The principal semantic constraint is that the head noun of double-barreled adjectives is prototypically a body part; this can be extended in partially predictable ways to abstract human qualities, and to objects that can be viewed metaphorically as parts of bodies. In its graded and partially predictable nature, this constraint reflects the radial category structure discussed by Brugman and Lakoff (1988) and Lakoff (1987). A second constraint limits modifiers of double-barreled adjectives to numerals and those denoting the head's more or less permanent or inherent properties, though here too there are occasional exceptions.

The morphological constraints concern the status of compounding in the formation of double-barreled adjectives. Standard views of compounding in English

(Kiparsky, 1982, Mohanan, 1986, Liberman and Sproat, 1992) assign this process either to level 2 morphology or to the domain of syntax, and assume that the elements of compounds are stems which stand on their own lexically. I argue here that the compounding in double-barreled adjectives takes place earlier, in level 1 morphology, and that the resulting compounds are, like roots, morphologically dependent, in the sense of Inkelas (1989). Bloomfield (1933) hints at a similar view, in the following passage, quoted in Kiparsky (1982):

“... forms like *long-tailed* or *red-bearded* are not aptly described as containing the words *tailed*, *bearded* (as in *tailed monkey*, *bearded lady*); the natural starting point is rather a phrase like *long-tail* or *red-beard*, from which they differ by the presence of the suffix *-ed*.”

This hypothesis is incorporated in the following three claims, which I claim account for the morphological peculiarities of double-barreled adjectives:

- (3) a. Double-barreled adjective formation is a lexical level process.
- b. The compound form in the course of this process is morphologically dependent, and it is this compound, not only the head noun, which combines with the *-ed* suffix.
- c. The compounding involved in double-barreled adjective formation takes place at level 1 of morphology.

I will argue for (3)a on the basis of the consistent assignment of primary stress to the first element (i.e., the modifier) in almost all double-barreled adjectives, as well as the impossibility of elements intervening between the modifier and the head noun. The claim in (3)b also is supported by the facts regarding stress, and by semantic considerations that depend on compound formation preceding *-ed* affixation for their interpretation. Morphological dependence is motivated by the impossibility of iterated double-barreled adjectives, in which respect they differ from noun-noun compounds. Finally, I argue for (3)c by showing that level 2 affixation within each element of a double-barreled adjective is at best marginal, though judgements on this show some variation among speakers. I then present rules within the framework of Inkelas (1989), which embody these claims; these rules imply that the compounds formed in the course of double-barreled adjective formation resemble roots in their morphological dependence, but differ from other roots in being derived constituents endowed with prosodic structure.

2. Semantic constraints

As mentioned above, double-barreled adjective formation is a productive process, but sometimes the results are somewhat peculiar-sounding. Consider the examples in (4):

- (4) white-shirted, wool-rugged, six-roaded, broken-trucked, lousy-teachered

I can see no phonological or morphological basis for the oddity of these examples, so I will now suggest some semantically based ones. In compiling lists of double-barreled adjectives it becomes apparent that large numbers of them refer to parts of the body, as in (1). Nonetheless, many have other meanings, so that it is not correct to claim that this is their sole semantic domain. I have attempted to provide a rough semantic classification of various double-barreled adjectives in (5).

(5)

		BODY PARTS		PARTS OF INANIMATES	
		HUMAN	ANIMAL	CLOTHES	STRUCTURES
ABSTRACTNESS	landed	snub-nosed dark-haired green-eyed six-fingered	sulphur-crested ivory-billed eight-legged winged	hooded short-sleeved pinstriped polka-dotted	high-beamed marble-floored steel-hulled
	moneyed	BODY CAPABILITIES			
		keen-sighted			six-sided
		sure-footed			double-edged
		able-bodied		multi-hued	
	cultured	weak-kneed			
	gifted	MENTAL CAPABILITIES AND CHARACTERISTICS		many-splendored	
	talented				fine-grained
		kind-hearted	long-winded		
		lily-livered	mean-spirited		
		two-faced	quick-witted		detailed
		small-minded	bad-tempered		

The vertical dimension in (5) corresponds to abstractness; the words toward the bottom tend to describe more abstract qualities. Along the horizontal dimension are arrayed various semantic domains more or less related to human body parts, the domain in which the largest cluster of these adjectives is found. This diagram resembles the cognitive topologies that Brugman and Lakoff (1988) and Lakoff (1987) have discussed; various meanings are related through metaphors and metonymies. Starting with the column labeled BODY PARTS, we see words like *snub-nosed* and *dark-haired*. These types of adjectives occur frequently in animal names as well as descriptions of humans, as birdwatchers know. *Sulphur-crested cockatoos* and *ivory-billed woodpeckers* are just two of many examples. Moving down the column, to more abstract capabilities of the body and its parts, we find terms like *sure-footed* and *keen-sighted*. Still more abstract are various mental capabilities and characteristics, at the bottom of the column. Two types of metaphor appear to be at work here. In some of these words, the term for a body part is used metaphorically to refer to a disposition, while in others the metaphor seems to be that of possessing a mental quality like *wit* or *spirit* just as one possesses arms and legs.

In the columns further to the right are terms describing various types of inanimate objects that might be seen as analogous to the body. Again, these range from fairly concrete to abstract, and some of the abstract ones in the lower right may simply be exceptions to the classification, since their meanings are quite broad.

In the left-hand column are terms referring to possessions, again ranging from concrete to abstract. Note that they are all dispositional; someone who happens to be carrying around a lot of cash would not be described as *moneyed*; rather, it means something like *rich*. This brings up another common feature of almost all double-barreled adjectives – they describe things that are possessed inalienably, like body parts. This may be why some of the examples in (4), such as *white-shirted* and *wool-rugged* are peculiar. Shirts are not inalienably possessed by people, nor are rugs an inherent part of floors or rooms. Along the same lines, note that *gifted* cannot describe someone who has received a lot of presents – it refers to one's inalienable capabilities and talents. Most of the modifiers in (5) are either quantifiers, or refer to persistent or dispositional qualities of the head noun. Thus the adjectives *tired-bodied* and *dirty-sleeved* sound aberrant, though there are exceptions like *bare-chested*, *empty-handed*, and *open-mouthed*, which are fully acceptable.

Thus, the oddity of many double-barreled adjectives that morphologically well-formed, such as those in (4), lies in their semantic distance from the prototypical case of a double-barreled adjective in which the head denotes a body part and its modifier is persistent, dispositional, or quantificational. Because various departures from the prototype are allowed and deviance from it is a matter of degree, varying judgements of acceptability are to be expected in marginal cases. For example, shirts may be more closely connected with their wearers than watches, so that *white-shirted* sounds more natural than *Swiss-watched*. Examples that bear little resemblance to the prototypical case, such as *lousy-teachered class*, *broken-trucked driver*, or *six-roaded intersection*, sound rather bizarre.

3. Morphological constraints

I will now turn to the morphological analysis of double-barreled adjectives. The following discussion draws on the work of Inkelas (1989) on lexical phonology and morphology, in which both morphological and phonological constituent structures are posited at each level of lexical derivation (these will be indicated by *m* and *p* subscripts respectively). Rules of morphological and phonological constituent formation (MCF and PCF) apply at each level to material that is not yet organized at that level (the designations α and β will refer to rules and constituents at levels 1 and 2 respectively, and no independent specification of levels is necessary).

The form of the argument is this: first, I show that double-barreled adjective formation is a lexical, not a phrasal, process. If this is so, then the question of ordering between the two processes of *-ed* affixation and compounding of the

modifier and head arises. I argue that the compounding precedes *-ed* affixation in the derivation of these words, and that a morphologically dependent compound headed by a noun exists at some stage of double-barreled adjective formation. Furthermore, the evidence suggests that this compounding takes place at level 1, before level 2 affixes can apply to either of the words of the double-barreled adjective.

One indication that double-barreled adjective formation is lexical and not phrasal is their uniformly assigned modifier (lefthand) stress¹, which suggests a lexical level syntactic constituent (Lieberman and Sproat, 1992). If double-barreled adjective formation were phrasal, then we would expect that main stress would fall uniformly on the righthand element, under the Nuclear Stress Rule. If it is a lexical process, however, the NSR would not apply, and we would not expect a righthand stress pattern in double-barreled adjectives. (Compound adjectives other than double-barreled adjectives may be syntactically phrasal, such as *pale green*, *brand new*, *revenue neutral*, or *formal semantic*, which have main stress on the final element and secondary stress on the initial one, or lexical, such as *northwest*, *well-intentioned*, *heartfelt*, or *praiseworthy*, in which only one main stress is present.) This argument parallels that made by Lieberman and Sproat with regard to phrases used as epithets; for example, in:

(6) Hey, *bíg* mouth!

the main stress is on *big*, whereas in:

(7) You've got a big *móuth*.

the main stress is on *mouth*. Lieberman and Sproat suggest that the difference in stress in this case and related ones is a consequence of the lexicalization of epithets and related constructs, such as place names.

Furthermore, no material may intervene between the elements of double-barreled adjectives, so that forms like *so kind a hearted man* or *strong and fair-minded* (meaning 'strong-minded and fair-minded') are ill-formed². Lastly, unlike phrasal processes, no iteration is possible in the process of double-barreled adjective formation; thus forms like *green-eyed-headed* or *eight-long-legged* are ill-formed.

We have established, therefore, that double-barreled adjectives are derived lexically. Since double-barreled adjective formation involves both a compounding process and an *-ed* affixation process, there are two alternative orderings to consider; compounding either precedes *-ed* affixation to the head noun, or follows it, but in any case both are lexical processes, not phrasal ones.

The first alternative is preferable to the second on several counts. First, the hypothesis that double-barreled adjective formation is lexical implies that their stress is not assigned by the Nuclear Stress Rule, but does not in itself predict the uniformity of stress assignment that we observe. The ordering of compounding

before *-ed* affixation, however, does entail this uniformity. After compounding, the modifier will receive main stress through the same rules that assign stress to the lefthand element in other syntactically lexicalized noun-noun and adjective-noun compounds (Lieberman and Prince, 1977, Lieberman and Sproat, 1992). Subsequent affixation of the stress-neutral *-ed* does not affect stress assignment. The contrasting derivations of double-barreled adjectives and other compound adjectives is nicely illustrated with forms containing the root *multi-*, which differ in stress:

- (8) a. *múlticolored, múlti-legged, múlti-pronged*
 b. *multicúltural, multi-éthnic, multiláateral, multi-strátal*

The examples in (8)a generally bear main stress on the first syllable of *multi-* (although main stress on the second element seems possible in some cases also). Those in (8)b, however, may never bear main stress on *multi-*, but only on the second element. The difference is explicable if the double-barreled adjectives in (8)a are assigned stress at a stage when they are noun-headed, which the adjectives in (8)b never are. At that stage, the Compound Stress Rule will apply to the forms *multi-color*, *multi-leg*, and *multi-prong*, assigning stress to the first syllable of *multi-*. Such a stage will arise if compounding precedes *-ed* affixation, but not under the reverse ordering.

In addition, the absence of terms like *warmly-blooded*, as opposed to *warm-blooded*, is predicted under the first ordering but not the second, because *blooded* is presumably an adjective which we would expect to take an adverbial modifier if the second alternative were correct. The term *warmly-blooded* could only mean something like 'blooded in a warm fashion'. Hirtle (1970) provides several parallel examples, which demonstrate that the modifier in double-barreled adjectives modifies the noun head before *-ed* affixation. Furthermore, there are examples of double-barreled adjectives that are quite clearly derived from a previously existing compound, such as the following:

- (9) *pot-bellied, polka-dotted, pinstriped*

In form and meaning these appear to come from the lexicalized compounds *pot-belly*, *polka dot*, and *pinstripe* respectively, as the first alternative would have it. Assuming that the same processes form the examples in (9) and other double-barreled adjectives, this supports the ordering of compounding followed by affixation.

The next issue I will consider is the level at which compounding takes place. A standard view of compound formation in English (Kiparsky, 1982) is that it takes place at level 2, and Mohanan (1986) has suggested that it takes place at a distinct level 3. I propose that the compounding involved in double-barreled adjectives takes place earlier, at level 1, and that unlike other compounding processes in English, it results in a morphologically dependent constituent – essentially, a derived root. There are two considerations that lead to this view. The first one is that ordinary level 2 processes of compounding and suffixation cannot precede the

formation of double-barreled adjectives in a derivation. Consider the level 2 affixes *-ing*, *-ly*, and *un-*, and note the contrasts in (10):

- | | |
|-------------------|---------------------------------------|
| (10) wood-floored | *wood-flooringed (cf. high-ceilinged) |
| warm-hearted | *warm-feelinged |
| web-footed | ??webbing-footed |
| kind-hearted | *kindly-hearted, *unkind-hearted |
| even-tempered | *uneven-tempered |

Secondly, compounding in either element of a double-barreled adjective yields at best questionable results, as the examples in (11) show:

- | | |
|-------------------|------------------|
| (11) keen-sighted | ?keen-eyesighted |
| heavy-browed | ?heavy-eyebrowed |
| heavy-beamed | *topheavy-beamed |

These two observations make it difficult to maintain that the compounding involved in double-barreled adjectives takes place at level 2. If it did, we would expect these examples to be perfectly good, because ordinary compounding can apply cyclically and there is nothing to block it from applying several times until *-ed* affixation ends it. Likewise, the examples in (10) could have the suffixes applying on one cycle, followed by the double-barreled compounding and *-ed* affixation on the next.

Thus I propose that double barreled adjectives are a level 1 construct, at least at the compounding stage. This blocks all of the ill-formed examples in (10) and (11), while at the same time allowing such examples as (12), in which level 2 affixes occur outside the *-ed*:³

- (12) left-handedness, single-mindedly

Still, if we posit a compounding process at level 1, we need to prevent it from applying repeatedly, as before. The solution to this problem lies in the morphological dependence of the nominal compound formed at level 1. Starting with two stems, x_1 and x_2 , a compounding rule constructs morphological and prosodic structures as in (13), again following the model developed by Inkelas:

- (13) α P-Compounding

$$\begin{array}{ccc} \text{morph. const.} & & \text{morph. const.} & & \text{prosodic const.} \\ [x_1]_{m_\alpha} [x_2]_{m_\alpha} & \longrightarrow & [[x_1 x_2]_{m_\alpha} []] & & [x_1]_{p_\alpha} [x_2]_{p_\alpha} \end{array}$$

The compounding rule posited in (13) creates a morphologically dependent compound of category α . Morphological dependence has two desirable consequences here. First, this compounding process cannot be iterated, because the morphologically dependent output may not serve as one of the inputs, which are specifically not dependent. Thus, forms like *green-eye-headed* and *six-finger-handed* are correctly ruled out. Additionally, morphological dependence accounts

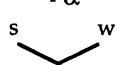
for the requirement that *-ed* affixation to the resulting compounds will occur, since these compounds are not found without the *-ed*.⁴

The *-ed* affix that satisfies the output's subcategorization need not be distinguished from the *-ed* forming participial adjectives like *guarded* or *pointed*. Note that it would be undesirable to assign the output of *-ed* affixation in double-barreled adjective formation to level 1, because we would again face the problem of repeated compounding; the resulting adjective, no longer morphologically dependent, could serve as input for another cycle of compounding. For example, *green-eyed* could serve as a modifier of *head*, and we would therefore predict that forms such as *green-eyed-headed* would be perfectly acceptable. Since they are not, I will assume that the morphological subcategorization of *-ed* specifies that the resulting form is at level 2, as in (14):

(14) [[] ed]_{m β}

On the other hand, it is undesirable, on theoretical grounds at least, to delay application of *-ed* affixation until level 2. If the output of the α P Compounding rule in (13) advanced directly to level 2 without *-ed* affixation applying, it would still be morphologically dependent as it exited level 1. That is, its morphological subcategorization would still be unsaturated, which would be unlike the behavior of any other root. Therefore, the subcategorization in (14) does not specify the level of the complement of *-ed*, and affixation may take place at level 1 but yield a level 2 output. To illustrate, the following shows the derivation of the double-barreled adjective *green-eyed*:

(15) derivation of *green-eyed*

- | | | |
|---------------------------|---|---|
| a. α MCF | [green] _{mα} | [eye] _{mα} |
| b. α P-Compounding | [[green eye] _{mα} []] | |
| | [green] _{pα} | [eye] _{pα} |
| c. α PCF | — | |
| d. Stress Rules | [green] _{pα} | [eye] _{pα} |
| |  | |
| e. <i>-ed</i> affix | | [[] ed] _{mβ} |
| | | [[] ed] _{pβ} |
| f. <i>-ed</i> Affixation | [[green eye] _{mα} ed] _{mβ} | |
| | [[green] _{pα} [eye] _{pα} ed] _{pβ} | |

The double-barreled adjective construction is thus unusual in English in that it involves a morphologically derived root, the noun-headed compound in step b of (15). Unlike underlying roots, these come furnished with a prosodic constituent structure, since they are derived, and therefore serve as a domain for phonological rules. This includes rules of stress assignment, shown in step d, which yield the uniform left-element stress discussed earlier.

Some people's judgements are more liberal than my own when it comes to the acceptability of multiple compounding in (11). My analysis of the ordering of compounding and *-ed* affixation suggests that, for these speakers, there is no level 1 compounding rule and the compounding in double-barreled adjective formation takes place in level 2. But we will still want to distinguish it from "normal" noun-noun compounding because of the morphological dependence of the resulting compound. Those speakers who find *keen-eyesighted* or *high-foreheaded* acceptable still don't accept *green-eyed-headed* or *eight-long-legged*. The unsaturated morphological subcategorization of the compound will block these, because it does not match the morphological requirements of the normal P Compounding rule.

4. Conclusion

Double-barreled adjectives provide evidence of a type of compounding that differs in two respects from that found in other morphological constructions in English. First, the compounding rule I have proposed in (13) appears to apply at an earlier stage than other types of compounding. Second, its output is morphologically dependent, and resembles a root in this regard. Unlike roots, however, these compounds are already endowed with prosodic constituent structure when formed, and are thus immediately subject to phonological rules. This situation is one that Inkelas's framework does not rule out, and double-barreled adjectives suggest that it should not be ruled out. Lastly, the combination of morphological characteristics and semantic constraints that apply to double-barreled adjectives serves to explain their productivity and, contrastingly, their relatively narrow range of uses.

Notes

I am particularly indebted to Cleo Condoravdi for extensive discussion and numerous suggestions, and to Sharon Inkelas, Tibor Lacsco, Will Leben, and Martha Swearingen for discussion and examples. None of these people necessarily agrees with what I have said here, however.

1. There are a couple of exceptions to this uniformity. *Double-barreled* appears to allow main stress on the first syllable of *barreled*, and *single-minded* behaves similarly. I do not know why these should be exceptional.

2. Jespersen (1942) cites examples like these, but they are not acceptable to any of the speakers I have consulted.

3. There is more to be worked out here, because prefixes like *un-* still cannot be affixed at this stage. For example, **un-kind-hearted*, meaning ‘not kind-hearted’, seems just as ill-formed as the meaning intended in (10), ‘having an unkind heart’. Nothing that I say here rules out the first of these meanings.

4. Like *pot-belly* and *polka dot*, there are a few such compounds that may surface without an added *-ed*, such as *redeye*, *redneck*, and *sweetheart*. However, with the possible exceptions of animal names like *bottlenose* (a type of dolphin) or *ruby-throat* (hummingbird), and epithets like *big mouth*, these are uncommon and idiosyncratic, as the nonexistent *green-eye*, *strong-neck*, and *kind-heart* show.

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