

# PROSODIC ISSUES IN DANISH COMPOUNDING: A COGNITIVE VIEW

by  
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The key problem in many 'cognitive' analyses is how to derive and test their empirical consequences, in principle and in practice. This problem is illustrated with parts of an analysis of the prosody of Danish compounds from a cognitive viewpoint. Stress is seen as one dimension of linguistic weight, and its relation to other weight phenomena is considered, departing from a hypothesis of iconicity (sections 1 and 4, the latter on *stød*). The relation between lexico-grammatical structure and stress patterns in Danish compounds is considered in section 3, and the paper ends with a look at a few prosodic consequences of conventionalised pragmatics (section 5).

*To Anna Wierzbicka, a pioneer of cognitive linguistics*

## 1. 'Heavy words' in Danish: prototypes and iconicity

It is well known that the concept of *prototype* is central in modern so-called cognitive linguistics, following Eleanor Rosch's famous tests.<sup>1</sup> It is also well known that *icon* (as introduced by C. S. Peirce, cf. Dressler 1985) is a central concept in many versions of semiotics, and in cognitive linguistics as it is intended here, that is, following the international journal *Cognitive Linguistics*. The scientific key problem in many types of so-called cognitive linguistics is *testability*: Many cognitive analyses are interpretations – often convincing and insightful interpretations – rather than empirical statements. The latter are hypotheses from which consequences can be deduced and compared with linguistic data and, both in principle and in practice, can also be falsified. In a previous paper (Basbøll 1990), I applied some cognitive principles to the field of Danish prosody in a testable way. A summary of the main points of that paper follows, since the notion of *heavy words* developed there is crucial for the analysis of Danish compounding below.

The notion of '*heavy*' (or '*independent*' words) is often appealed to in linguistics, albeit in a rather intuitive fashion in many cases. It can be understood in a number of different ways, cf. (1).

(1) *Characteristics of the 'heavy' (or 'independent') word*

- a *Phonology (segmental)*: relatively long (typically polysyllabic); often has a heavy syllable.
- b *Morphology*: inflected (inflectable), most often in several paradigms.
- c *Productivity*: productive; infinite inventory.
- d *Syntax*: relatively independent of context, e.g. tends to occur as head in major syntactic constructions.
- e *Semantics*: relatively independent of context; high information content (cf. 'content' words as opposed to 'function' words).
- f *Frequency*: tends to be relatively infrequent.

It is my claim that 'heavy' words will typically be heavy along many of these dimensions, as opposed to 'light' words. Notice that prosody is not mentioned, since this would lead to circularity, as will become clear below.

The following, (2), is a preliminary classification (with respect to the criteria enumerated) of eight word classes used in a strong tradition of Danish grammar. The eight word classes are, in the order of the columns in the table: N(oun, i.e. substantive), V(erb), Adj(ective), Num(eral), Adv(erb), Pre(osition), Pro(noun), Con(junction).

(2) *Word classes and 'heavy' vs. 'light' characteristics in Danish*

	N	V	Adj	Num	Adv	Pre	Pro	Con
Phonology	+-	+-	+-	+-	(-)	(-)	(-)	(-)
Morphology	+	+	+	(+)	(-)	-	+	-
Productivity	+	+	+	(+)	(-)	(-)	-	-
Syntax	+	+	+-	+-	+-	+-	+-	-
Semantics	+	+	+	(+)	(-)	-	-	-
Frequency	+	+	+	+	(-)	-	-	(-)

The pluses and minuses in the table indicate that the word class in question typically seems to be 'heavy' vs. 'light' with respect to the relevant dimension. '+ -' indicates that both 'heavy' and 'light' items seem to be frequent, whereas '(+)', '(-)' indicate that the filling of this cell is somewhat uncertain. The table has no theoretical status, but it points to the bifurcation of the eight word classes into two major groups with respect to 'heaviness'. *Prototypically heavy* are N V Adj Num; *prototypically light* are Adv Pre Pro Con. Notice that a prototypically heavy word class need not be heavy according to each dimension listed, and vice versa.

We can now formulate the following hypothesis: In neutral contexts, heavy word classes are stressed (have primary stress, i.e. are prosodically heavy), light word classes are unstressed (i.e. are prosodically light). This is a principle of *prosodic iconicity*. Recall that prosody did not enter into the criteria of 'heavy' vs. 'light' word classes.

The testing procedure is as follows. First, we identify examples which contradict the hypothesis. Our source is Hansen & Lund (1983), an operational 'grammar of stress', structured according to the traditional word classes mentioned above. Here, we can see in which (grammatically defined) contexts elements belonging to a certain word class are stressed (have primary stress) or unstressed, when they occur in neutral and distinct speech (with the exception of 'emphasis'). The next task is to identify the complete set of exceptions to our hypothesis – i.e. where a word belonging to one of the 'heavy word classes', according to (2), is unstressed, and where a word belonging to one of the 'light word classes', according to (2), is stressed. Next, some rules are formulated for the exceptions found (again, based upon Hansen & Lund 1983). The following question is then asked: Do the 'rules' for the exceptions to the present hypothesis – viz. that words belonging to the prototypically heavy word classes are stressed and words belonging to the prototypically light word classes are unstressed – make sense from a cognitive viewpoint, i.e. can they be claimed to be cognitively motivated? More specifically, we ask whether the exceptions to the hypothesis can be accounted for as being deviations from what characterizes prototypically heavy or light words according to (1). If this is the case, the principle of the distribution of 'syntactic stresses', in the sense of Hansen & Lund (1983), does not depend on the traditional word classes which we used as our departing point; the word classes have

merely functioned as a means of organizing the testing procedure. Consequently, the categories of heavy and light words, rather than word classes like N, V, etc., are decisive for the distribution of stress. This points to a cognitive principle of iconicity being relevant for the distribution of stress.

Our *testing procedure* can be illustrated by means of the following examples (from Hansen & Lund 1983). N and Adj are typically stressed, but unstressed in cases like *kilo* 'kilogram' in *et kilo ost* 'a kilogram of cheese' and *Store* 'great (def. form)' in *Store Bededag* 'Great Day of Prayer'. Such cases represent deviations from the prototype of the word classes N and Adj, as can be shown by checking the criteria mentioned above (cf. Basbøll 1990). Thus, *kilo* cannot be inflected (in number, case, or definiteness); it is not a head; it belongs to a finite, in fact very small, paradigm whose members are very restricted, semantically. Words belonging to the typically light word class Pre(positions) are generally unstressed as far as the most common examples are concerned (with a few well-defined exceptions, see Hansen & Lund 1983). Another group of Pre can be either stressed or unstressed, however. These can be characterized as being phonologically heavy, since they are either polysyllabic or contain a phonologically long vowel in a closed syllable.

The overall outcome of the testing procedure is that the real deviations from our hypothesis – viz. that words belonging to heavy word classes are stressed, and words belonging to light word classes are unstressed in general, neutral contexts – are also deviations from the prototype of heavy and light words, respectively. This, of course, corroborates our hypothesis. In order to test the hypothesis generally, however, one should also check all cases where the hypothesis seems to work (viz. the large majority of cases), to see whether some of these are also deviations from the prototype, and give rules for all such cases. As not all this has yet been done, the hypothesis cannot be considered fully tested at present.

## 2. Compounds: 'words in words' (not least in Danish)

Compounds can be informally characterized as words consisting of at least *two roots*, where a root is a morpheme that can form a word either by itself, or simply by adding an inflectional marker. There are, of course, fuzzy boundaries between a compound and a sequence

of two consecutive words on the one hand, and between a compound and a word consisting of a root and a heavy suffix on the other. In language change, we observe that some of these borders are transcended. The concept of a *word* is thus presupposed in the characterization of a *compound*. In establishing the distinction between a single word and two consecutive words, the crucial points have to do with distribution. Relevant considerations include the isolatability, movability, and fixed internal order of the components, all related to the (psychologically real) aspects of structuring. Semantics, on the other hand, is not decisive, and the notion *lexical item* is quite different from the notion *word*.

As far as phonology is concerned, no unique criteria for *wordness* can be given. Phonetics similarly fails to provide such criteria. From the point of view of prosody, Danish examples can be given of non-compounded words with the typical 'compound stress pattern', as seen in (3a). These are prosodically indistinguishable from productively formed compounds, such as the ones in (3b), and from lexicalized compounds, such as the ones in (3c). Finally, the (historically speaking) lexicalized compounds in (3d) are probably not transparent to most native speakers; they do not have compound stress but 'unit accentuation', i.e. non-initial stress.<sup>2</sup>

### (3) Examples of Danish compounds and "compounds"

- a 'klog, ska?b, 'para, di?s 'cleverness', 'paradise'
- b 'hatte, ska?b, 'sundheds, ri?s, "hat-closet", "health-rice"
- c 'klæde, ska?b, 'spare, gri?s, "dress-closet" (i.e. 'wardrobe'), "save-pig" (i.e. 'piggy-bank')
- d rød'bede, skov'mærke, "red-beet" (i.e. 'beetroot'), "forest-mark" (i.e. 'woodruff').

For languages that have the typical Germanic type of compounds and compound stress, the second part of two part compounds is the *head*; this part determines word class, basic semantics, morphology, and so forth, as seen in frequent compounds such as English *cranberries* and Danish *tyttebær*. While such forms do not, from a synchronic point of view, have a first part that is identifiable by the language user, they nevertheless are compounds ending in *-berries* or *-bær*, respectively.

In previous work, I have claimed that the decisive criterion in determining if a word has a 'strong sign boundary' (strong internal juncture, symbolized '#' in Basbøll 1975) is the identifiability of the second part, e.g. by means of a derivational suffix which can be determined easily, independently of the identifiability (or not) of the first part. This claim can now be viewed in the light of Raffelsiefen's (1994, cf. 1993) model for word parsing. According to her model, words with unit accentuation are analyzed, by the language user, as consisting of the prosodic words XY if the last part of the input form can be identified with an existing word form Y, regardless of the identification (or not) of X. What is interesting in words like *cranberries*, *tyttebær* is the fact that the stress pattern is the normal compound stress, while the last part is a normal lexical word. As far as I know, diachronically, such words as *tyttebær* can continue their language life as compounds, that is, they do not seem to be subjected to the kind of radical phonological reductions suffered by original compounds, where the identifiability of the second part, but not of the first, has been lost; e.g. *'vindue* 'window' from earlier *'vind-øje* ("wind-eye"), in modern spelling.

### 3. Prosody in Danish compounds: stress

The modern, linguistic study of Danish compounds was initiated by Rischel (1972). He showed how the typical Germanic compound stress pattern could be read out directly from the relevant 'generative' tree structure, without any use of 'cyclic' rules (i.e. rules involving erasure of part of the structure, followed by reapplication of the same rules).

In Rischel's system, *no well defined number of stress degrees* is posited; in fact, the last section of his paper is called 'Abolition of 'degree of stress' as a linguistic parameter'. Instead, he operates with a *binary contrast* at different levels between stressed and unstressed. Rischel adds that there must be principles of 'shrinkage of structure' or 'flattening of structure', which operate in addition to the principles for reading off the tree structure (cf. Rischel 1983).

Interestingly, Fischer-Jørgensen (1948/61) discussed compound stress in Germanic languages in terms that were very close to those presented in Chomsky, Halle & Lukoff (1956), the paper that introduced the treatment of stress into generative phonology.

Finally, it should be mentioned that both Fischer-Jørgensen and Rischel emphasize the importance of rhythmic principles in accounting for the stress pattern of compounds.

The Danish philologists I have in earlier work (1989) referred to as 'Ny-Jespersenianerne' (i.e. 'The Neo-Jespersenians', e.g. Brink and Lund (cf. 1975)) make use of a system of *three degrees of stress*, not including emphasis. I try to combine this latter view with that of the binary stress distinction mentioned above: There is a binary distinction in the lexico-grammatical structure, but three degrees of stress are distinctive in a *concrete-phonological* sense, viz. primary, secondary, and tertiary accent (i.e. main stress, secondary stress, and unstressed). My claim is that these three degrees of stress are what can normally be distinguished – and identified intersubjectively – in natural (but relatively distinct) speech, when the speakers do not have access to other cues to the structure of the compounds. Additional degrees of stress are sometimes distinguished by native speakers once they identify the lexico-grammatical structure and use this knowledge in their interpretation of the speech signal; this is not, however, tantamount to saying that they distinguish between more than three degrees of stress (but cf. Fischer-Jørgensen 1997). True minimal pairs are important in determining the number of genuine stress degrees, since *stød* and vowel length, as well as other aspects of syllable weight, interfere with the perception of stress as such.

In Basbøll (1978), I proposed an algorithm that ascribes exactly three degrees of stress to Danish compounds, based upon the following premises: First, in the lexicon, full vowels are stressed (i.e. have '1 stress' in the system below), and schwas are unstressed (have '3 stress'). Second, regardless how complicated compounds can be in their underlying forms (with respect to grammar, semantics, or the lexicon), there are only two strengths of boundaries in a compound, as far as prosody is concerned; these are what I call marked and unmarked compound boundaries. In other words, between two adjacent parts of a compound, there may either be a marked boundary, or there may not be one. This is the most restricted hypothesis that I have found to work for compound structure in Danish, in the sense that it seems to account for *the prosodic distinctions which we find in natural but relatively distinct speech* (I return to the semantic implications below). Third, within each part of a compound, there is, technically, a kind of 'unit accentuation'. That is, vowels before the last stressed vowel have stress reduction, i.e.

are generally reduced to '3 stress' in the terminology used here. The rules originally proposed (Basbøll 1978) are reproduced here as (4).<sup>3</sup>

(4) *Stress rules proposed in Basbøll 1978*

Rule 1	1	1	⇒	3	1	Rank: /		
Rule 2	1	1	⇒	1	2	Rank: //		
Rule 3	1	2	2	⇒	1	3	2	Rank: ///
Rule 4	2	1	⇒	3	1	Rank: ///		
Rule 5	1	1	⇒	1	2	Rank: ///		

The system of ranks is used in accordance with the notion of hierarchies of domains (cf. Basbøll 1975). A rule of rank *n* applies within a domain limited by boundaries of rank *n* or higher; it ignores all boundaries of lower rank than *n* in its application. A rule applies from left to right; it reapplies as long as its structural description is met (for details, see Basbøll 1978; cf. Basbøll & Kristensen 1977 for a brief account of a computer application of such a system). In (4), we see that (a) the main compound rule reapplies when the domain is enlarged (Rule 2 = Rule 5), (b) that Rules 1 and 4 are different unit accentuation rules, and (c) that Rule 3 represents a rhythmic principle. The most interesting aspect of the system is its very restricted mechanism. That is, we find an input structure (to the stress rules, cf. note 4) that only allows one kind of marked compound boundary, corresponding to tree structures with only two levels of branching. I predict that this accounts for the stable distinctions which Danish speakers master in compound accentuation. The algorithm is 'deterministic', i.e. its only 'freedom' consists in the distribution of marked compound boundaries.

For the present purpose, I shall consider the system of stress rules to be a 'black box' with regard to the model's interpretation. The crucial question then is: Are the pairings between input structures and sequences of stress, as predicted by the model (in a 'three degrees of stress'-system), in agreement with the facts of language, including speakers' intuition? And more specifically: Whenever the stress pattern observed corresponds to a suggested input structure with (or without) a marked compound boundary, is that boundary (respectively, lack of boundary) plausible as a hypothesis for semantic structuring? Thus, if two adjacent compound parts are separated by a marked boundary, each of the parts should be more independent

semantically (or even psychologically) than if there were no such boundary.

In addition, a number of more specific predictions can be derived from the system, among them the following. First, *the prosodic consequence of lexicalization* – in this model: loss of a marked compound boundary – *is a reduction of stress* in the middle part of the compound, if the lexico-grammatical structure is  $||| X || Y | Z |||$ . Second, for compounds which have the lexico-grammatical structure  $||| X | Y || Z |||$ , *lexicalization* in this sense – loss of a marked compound boundary – *will not result in stress reduction*, since the stress pattern 1 3 2 represents a neutralization product of the lexico-grammatical structures  $||| X | Y | Z |||$  and  $||| X | Y || Z |||$ .<sup>4</sup>

An interesting aspect of this minimalist model is the very limited range of stress patterns which it predicts, even for long and complicated compounds. The question is, of course, how the patterns predicted by the model correlate with the stress distinctions which actual speakers of Modern Standard Danish in fact make. (5) presents the stress pattern of some compound structures as derived by the rules of (4), also indicating contrasts and non-contrasts of the derived stress patterns.<sup>5</sup>

(5) *Stress patterns predicted from (4)*

<i>a</i>	///under//salgs/chef///	⇒	1 (3) 2 2
<i>b(i)</i>	///ud//salgs//dame///	⇒	1 3 2 (3) =
<i>b(ii)</i>	///ud//salgs/dame///	⇒	1 3 2 (3)
<i>c(i)</i>	///for//bunds//dom//stol///	⇒	1 3 2 2
<i>c(ii)</i>	///for//bunds/dom//stol///	⇒	1 3 3 2
<i>d(i)</i>	///for//bunds//dom//stols//dommer///	⇒	1 3 2 3 2 (3)
<i>d(ii)</i>	///for//bunds/dom//stols//dommer///	⇒	1 3 3 3 2 (3) =
<i>d(iii)</i>	///for//bunds/dom//stols/dommer///	⇒	1 3 3 3 2 (3)

Using the input structure *///for//bunds//dom//stols//dommer///* as an example, this structure represents the hypothesis that the complicated compound in question is divided into three 'chunks', psychologically speaking, viz. *forbunds-*, *-domstols-*, *-dommer*.

In cases like *Landbo'høj.skolen, grøn'lang.kål?*, lit. "Farmer--high-school", i.e. "The College of Agriculture and Veterinary Medicine", "green--long-cabbage" ('a rural vegetable dish'), the only input structure which corresponds to the stress pattern to be observed is one

where the one compound boundary occurs before the last part, viz. *skolen, kål*: *Landbohøjskolen, grønlangkål*.<sup>6</sup> Even though it may appear semantically bizarre that *Landbohøj, grønlang* should be considered parts (constituents in a sense), I do not find the structures implausible psychologically, since they follow the principle introduced earlier (section 2). There, the decisive factor in identifying compounds was claimed to be the identifiability of their final parts; in our case, precisely the parts *skolen, kål*, 'the school, cabbage', are easily identifiable, *skolen* even more so than *højskolen*. Thus, young students today speak about 'school' rather than 'university' or 'high school', whereas *langkål* is understood by practically nobody in today's urban culture. The compound '*Han?dels**høj,skolen* 'The Business University' can be construed as either *Handels/høj/skolen* or *Handels/høj//skolen* in our system, in order to be in accordance with the observed stress pattern.<sup>7</sup>

#### 4. Prosody in Danish compounds: *stød*

The *stød* has a particular role in the *morphology of compounds*.<sup>8</sup> Within Danish phonology, *stød* is generally considered a sufficient, but not necessary, condition for at least secondary stress in a system having two degrees below primary stress, which is the minimalist system of stress degrees assumed in the present paper. But also within a different framework, viz. one which does not have exactly two stress degrees below primary, the following argumentation on *stød* is relevant, at least as long as it is recognized that unstressed syllables do not have *stød*.

This alternative position on stress degrees can be detailed as follows (cf. Basbøll 1994b): *Stød* is a signal not only of primary, but also of secondary stress in a broad sense. This stress is in opposition to both primary stress (which is tonally signalled) and to unstressed ('tertiary', in my terminology), viz. a degree of stress which has no possibility of accommodating either vowel length or *stød*. The difference from my stronger version of secondary stress mentioned above is that the weaker notion of secondary stress does allow a possible distinction between a stronger and a weaker version of secondary stress (cf. Fischer-Jørgensen 1984, 1997).

According to the general mechanism of Danish compound stress, the following situation for *stød* in the middle part of compounds

consisting of three parts should be expected: If the major constituent break occurs between the second and the third parts – i.e. in a structure which can be informally abbreviated as  $||| X | Y || Z |||$  –, the second part will have an originally primary stress 'reduced by two degrees' (cf. section 3 above). That is, it would be expected to have 'tertiary stress' (in my terminology), and thus be reduced to a stress level where *stød* does not occur. If, on the other hand, the major constituent break occurs between the first and the second parts – i.e. in a structure which can be informally abbreviated as  $||| X || Y | Z |||$  –, the second part will have its original primary stress 'reduced by one degree' only, cf. (4) and (5) above; that is, it would be expected to have 'secondary stress' (in my terminology) and thus only be reduced to a stress level where *stød* still may occur. This situation is also what we find in the general case, cf. the examples '*udsalgs,dame* and '*under,sal?gs,che?f* mentioned in section 3. It should still be recalled that, according to a general, phonetically well motivated and well-documented principle – incorporated into (4) – the final part of the compound is normally not reduced below a secondary degree of stress, cf. the example '*under,sal?gs,che?f* just mentioned.

Thus, the general distribution of *stød* in compounds is by and large in agreement with the expectations warranted by the account of stress given in section 3, above. There are, however, some specific deviations, which I shall try to account for, or at least interpret, from the general cognitive point of view that I have chosen in this paper. First of all, there are a number of examples where *the second part of the first part* (in three part compounds) keeps its *stød*, even though it should be expected to be reduced 'by two degrees':<sup>9</sup> '*fri(,)han?dels,man?d*, '*under(,)vi?sningsmi,nister* "free-trade--man", "under-showing--minister" (i.e. 'Minister of Education', "under-showing" being lexicalized for 'teaching'). Common to these cases seems to be that a heavy part – in this case, phonologically as well as morphologically; cf. section 1 above – keeps its *stød*; this is the iconic principle of weight (in prosodic, as well as in other respects) which we have already encountered a number of times. Recall that prosody did not, of course, take part in the criteria of heaviness originally used, as otherwise the argument would be circular.<sup>10</sup>

In recent generations of Danish speakers, there has been a tendency towards loss of *stød* in the middle part of three-part compounds in which the major break follows the central part, i.e.  $||| X | Y || Z |||$ . This has led towards the modern system where such

middle parts, when they are not heavy (cf. above), are *stød*-less. To take an example: in a word like '*under(,)van(?)ds,båd?*' "under-water-boat" (i.e. submarine), Copenhageners of my age and younger do not have *stød* in the middle part, whereas older and/or 'more provincial' speakers of the Standard may have *stød*. According to the very large survey by Brink & Lund (1975: 509f) – which is based upon a huge corpus of tape recordings, grammophone records, etc. – the following factors contribute to the loss of *stød* in middle parts with the structure ||| X | Y || Z |||, e.g. '*vand,stan?ds,høj?de*' > '*vandstands,høj?de*' "water-stands--height", '*vand,stan?d*' being lexicalized as 'water level': (1) Fast speech; (2) high frequency of the compound; (3) a light middle part (a term they do not define; however, the context suggests that for them, it is a phonetic notion).

Brink & Lund's principles appear to have a cognitive motivation. Ad (1): Fast speech normally correlates with a low degree of attention to form, and thus also to the individual parts of the speech chain. Ad (2): Frequently occurring compounds are more closely connected as lexical items (as parts in a close lexical network; cf. Aitchison 1987) than infrequent ones; consequently, the parts of such compounds can easily lose some of their identity, including their phonological identity, of which the *stød* is an important part. Ad (3): This is the iconic principle we have met several times, viz. that prosodic weight tends to co-occur with other aspects of linguistic weight, in the broad sense of section 1 above.

Let us now leave the particular problems of *stød* in the middle parts of three-part compounds, and turn to *stød* vs. absence of *stød* in the *first part of compounds*, regardless of whether they have only two, or more than two parts. In the first part of compounds, *stød* (if it occurs there) is always an original, not an added-on feature; hence in these cases, we only have to account for its loss vs. its retainment (cf. Basbøll 1985). When the first part of a compound is monosyllabic and has *stød*, there are two possibilities as to prosody: (1) Either *stød* is lost (and in some cases, in particular before certain consonants, the same goes for vowel length),<sup>11</sup> or (2) *stød* is retained, and if it does, the same holds for possible vowel length. In the literature, case (1) is described as the normal case, which is correct when it comes to Danish words that are well established as first parts of compounds, '*vin,glas*', '*sol,skin?*' 'wine-glass', 'sun-shine', etc. What we are really talking about here is *stød* as a lexical property of '*vi?n*', '*so?l*' etc., which has nothing to do with the following second part of the compound

in question. More recent and not yet fully established first parts of compounds do not have loss of *stød*, even though their phonological structure is indistinguishable from the phonological structure of first parts which do lose *stød*. E.g. a word such as '*kla?n,ter(?)net*' 'clanchequered' – just to take an ad-hoc formation illustrating a productive system of *stød*-rules – will always, in Advanced Standard Copenhagen (dialect), retain its *stød* in the first part '*kla?n*'. In contrast, a word like '*bi?l*' 'car', a neologism proposed by a newspaper in 1902 with astounding success, still has unstable *stød* conditions: '*bi(?)l,færg*' 'car-ferry'.

In general, clearly lexicalized compounds lose *stød* in their first parts. Thus, '*underlig*' 'weird' (etymologically from '*un?der*' (N) 'wonder' and the adjectival ending *-lig*) has no *stød*, as compared to a 'transparent' compound like '*un?der,tro?*' 'belief in wonders'. The retention of *stød* in the case of '*un?der*' (N) 'wonder' as the first part of a compound, contrasts with '*un?der*' (Prep) 'under' as a first part, which loses its *stød* (e.g. '*under,gå?*' 'undergo'). This is in full accord with the difference introduced earlier (section 1) between heavy and light words, as well as with the iconic principle which we have seen in operation in this context. The loss of *stød* in lexicalized first parts of compounds is sometimes accompanied by vowel shortening, even under phonological conditions where vowel length as a rule is retained. Thus '*stål,tråd?*' "steel-thread" (lexicalized as 'wire') has a short, lowered (first) vowel as opposed to '*stål,ski?b*', '*stål,taske*' 'steel-ship', 'steel-bag' with a long, non-lowered vowel (the former compound is regular, and perhaps lexicalized, while the latter is not lexicalized).

Let us now turn to the most difficult cases of all, as far as *stød* in compounds in Modern Danish is concerned: the development, respectively no change in status of *stød* (i.e., retention of *stød* or non-*stød*) in the *last parts of compounds* (i.e. typically the second parts of two-part compounds). The presence vs. absence of *stød* depends on the word class (part of speech) of the second part (which is the head of the construction semantically, syntactically, and morphologically). The main rule (on which there is agreement in practically all the scholarly literature on the subject, cf. Hansen 1943), is that verbs acquire *stød* as opposed to nouns.<sup>12</sup> Compare '*ud,ta?le*' (V) 'pronounce' vs. '*ud,tale*' (N) 'pronunciation', '*tale*' (V, N) 'speak, speech' vs. '*be'ta?le*' (V) 'pay'. I have earlier (1989) proposed that the rule which adds *stød* in reality does not depend on the word class

(part of speech) of the word in question, but only on its structure: e.g. the verb *'ud,ta?le* is formed as [ [ ud tal ] e ] (where *e* is the infinitive ending), whereas the noun *'ud,tale* is composed of [ ud ] 'out' plus [ tale ] 'speech'. If this structural analysis is accepted, it seems to me that the phenomenon of *stød* can be accounted for by means of well-documented rules and principles, quite independently of the word-classes.

The main problem in this analysis is that compounded nouns whose second parts are monosyllabic, do not contract *stød*. Why should a word like (*stød*-less) *'guld,ringe* (the plural of *'guld,ring?* 'gold ring') not be analyzed as [ [ [ guld ] [ ring ] ] e ], just as [ [ [ ud ] [ tal ] ] e ], a structure leading us to expect *stød* on *-ring?* Before I give my answer, let me point to the different lexicalization patterns involved. The prototypical examples of the verbs developing *stød* are obviously lexicalized, cf. *be'ta?le*, *'ud,ta?le*, *'under,vi?se* 'teach', *'under,dri?ve* 'understate (fig.)', *'af,gø?re* 'decide', etc. Similar lexicalizations are much less obvious in examples like *'guld,ringe*, *'små,fugle* 'small birds', *'sang,fugle* 'song birds', even though the latter may be lexicalized in some respects and to a certain degree, as well. Lexicalization should thus not be considered an all-or-nothing-affair (cf. Langacker 1987 and Aitchison 1987); put in other words, the second parts of such compounded nouns as *'guld,ringe*, *'sang,fugle* will be clearly identifiable to the speaker, more so than the second part of compounded verbs such as *be'ta?le*, *'under,vi?se*, *'af,gø?re* (also cf. the type *cranberries*, *tyttebær* mentioned in section 2 above). Still, the real crux here, and its solution, are tied to the fact that the schwa ending in the plural of nouns is non-productive (i.e. it is not added to new words). A non-productive ending is treated phonologically as part of the lexeme it belongs to (Basbøll 1998); hence we do not encounter *stød* in the plural *ringe* (regardless of whether or not the lexeme enters into a compound) just as in the case of the simple adjectival lexeme *'ringe* 'bad'.

It should also be mentioned that the heavier the first part of a compound – also lexically, cf. section 1 above –, the less likely the development of *stød* in the second part. As an example, consider the verb *'efterårs,grave* "autumn-dig" ('dig up [the garden] in the fall'; an ad hoc-formation): the very heavy first part invites the structural analysis [ [ efterårs ] [ grave ] ], and the compounded verb is not lexicalized.

### 5. Conventionalized pragmatics in Danish "compounds"

The notion *conventionalized emphasis* (cf. Basbøll 1990) can be illustrated by the following examples: *hun 'elsker 'slik* vs. *hun spiser 'slik* 'she loves candy', 'she eats candy' where *elske* is stressed, but *spise* unstressed<sup>13</sup> (cf. Hansen & Lund 1983). Thus, verbs like *elske*, *hade* 'love', 'hate' have primary stress, also under syntactic conditions where practically all other verbs – such as *spise* 'eat' in the example above – undergo unit accentuation with a following constituent, such that the combination verb + object becomes 'institutionalized' (cf. the papers in Rischel & Basbøll 1995, with references). The explanation seems to be that verbs like *elske*, *hade* have a kind of 'emphatic' content: they are inherently emphatic. This kind of emphasis is called 'conventionalized' here to indicate that it is part of the lexical content of a particular verb, as opposed to more normal types of emphasis, which are bound to a concrete utterance.

In cases like *'smad?der'skøn?*, *'stang'drukken*, *'brand'farlig* 'breath-takingly beautiful, dead drunk, bloody dangerous', where we have two equal primary stresses, we talk about *emphatic compounds*, whose heads (viz. the second components) have an emphatic (kind of) prefix, posing like the first part of a compound. This emphasis is manifested, according to my analysis, in two different ways: viz. by adding an 'emphatic prefix' or first part and by placing prosodic emphasis on the head, whereby the expected secondary stress is raised to primary stress. As a nice parallel, consider cases like *It was ME who did it*, where the emphasis on *me* is manifested both syntactically, by the cleft sentence construction, and prosodically, by raised stress on *me*. Emphatic forms like *'brand'farlig* 'bloody dangerous', with two equal primary stresses according to the mechanism of emphasis just outlined, and normal compounds like *'brand,farlig* ("fire dangerous", i.e. 'inflammable') with the normal compound stress (primary followed by secondary stress), form in fact minimal pairs, since they consist of exactly the same word parts in the same order. As already shown by Poul Andersen (1954), such constructions with conventionalized emphasis occupy a position, prosodically speaking, in between normal noun phrases and normal compounds: (en) *'lang?* 'drukken' ('fyr?) 'a long drunk fellow' vs. (en) *'stang'drukken* ('fyr?) 'a dead drunk fellow' vs. (en) *'lang,trukken* ('fore,stil?ling) 'a "long-drawn" (i.e. 'drawn out') performance'. In (en) *'stang'drukken* ('fyr?), there is no *stød* in *'stang-*. This clearly shows that (*stød*-less) *stang* cannot occur as



an isolated word (a free form), since a word of this phonological structure inevitably has *stød* whenever it is stressed (under normal semantic and syntactical conditions): cf. *'stan?g 'rod'*. On the other hand, the fact that *druk* has primary (and not secondary) stress shows that it cannot be (part of) a normal compound construction. Constructions with 'conventionalized emphasis' are in fact extremely productive, particularly among youngsters, and the 'emphatic prefixes' posing like first parts of compounds form an impressive open list of (in part vulgar) lexemes, which do not have the full specific meaning which they possess when used as words or in normal compounds and derivatives: *skide-*, *pisse-*, *død-*, *smadder-* etc. etc. 'shit, piss, death, mud' etc. etc.

These compound-like constructions with 'conventionalized emphasis' are interesting also because they have two equal primary stresses, despite the fact that they are clearly words, according to the only reasonable (i.e. distributional) definition. Since this may well offend some linguists with other ideas of what a word can be, stress-wise, I would like to mention a further type of Danish words with two equal primary stresses (cf. Basbøll 1994b): *'jule'morgen*, *'påske'dag?* 'Christmas Morning, Easter Day'. It has been suggested (Fischer-Jørgensen 1984) that such forms are lexicalized phrases; however, neither syntactically, semantically, nor morphologically they behave as normal phrases. If we want a definition of the word that does not beg the question by explicitly or implicitly demanding only one primary stress, we must recognize the fact that Danish has words with two equal primary stresses.

A further prosodic type is found in between two-word sequences (or normal phrases) and regular compounds. The type can be illustrated by examples like *'meget ,god?*, *'meget ,pæ?n* 'rather good, rather nice' etc., pronounced<sup>14</sup> with primary stress on *meget* and secondary stress on *god* and *pæn*. Only the word *meget* can have the first place in constructions like these, and only a small group of 'mildly positive' words can occupy second place (cf. Hansen & Lund 1983: 26). This prosodic type may be characterized as expressing a *conventionalized attitude* of evaluation. The prosodic type in question contrasts both with normal phrases like *'meget 'god?*, *'meget 'pæ?n* 'very good', 'very nice' and with forms having 'normal', i.e. non-conventionalized emphasis ('utterance-bound', in my terminology): *"meget 'god?*, *"meget 'pæ?n* 'VERY good', 'VERY nice', with emphatic stress on the first word of the phrases. Prosodically speaking, this

'conventionalized attitude' type *'meget ,god?* resembles a normal compound, whereas grammatically and semantically, it is different. Neither is it identical, however, to a normal – productively formed – phrase: both *meget* and *god* are unable to be modified or expanded in any way, while preserving the particular prosody of *'meget ,god?*

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## Notes

1. Most of the contents of the present paper were presented in a preliminary form in Basbøll (1994a), as a working paper, in Danish. – I am indebted to Eli Fischer-Jørgensen, Jacob Mey and Irene Vogel for useful critical remarks (pertaining to both content and expression) on different versions and parts of the manuscript.
2. All examples are given in orthographical form, italicized, including so-called 'mute letters'. The following prosodic diacritics are used: Primary and secondary stress are indicated by ' ' and ' ', respectively, before the relevant syllable. *Stød* is indicated by ' ? ' after the segment in which it occurs. Either all relevant prosodic diacritics are used in a given orthographical form, or none at all. On the phonetics of Danish compounds, see Fischer-Jørgensen (1984). Fischer-Jørgensen (1997) is a very detailed study of stress in three-part compounds.
3. ' / ' designates the lack of a marked compound boundary between two parts of a compound, ' / / ' designates the presence of such a marked boundary, ' / / / ' designates the boundary of a maximal prosodic word. ' 1 ' , ' 2 ' and ' 3 ' designate primary, secondary and tertiary stress, respectively.
4. In the case of more complex compounds, the input structure to the stress rules (as exemplified in (5)) must be simpler than the lexico-grammatical structures that can be posited on the basis of non-phonological criteria. This is due to a (in my view methodologically advantageous) restriction on possible compound boundaries.
5. '(3)' indicates that the syllable in question is unstressed due to the lexical presence of a schwa. '= ' indicates that the two structures in question are prosodically identical, regardless of their semantic or grammatical

- differences. '||' indicates that the two structures in question contrast with respect to distribution of stress.
6. *Landbohøjskolen, grønlang/kål* would give the same result, since in my system, different strengths of the compound boundary (marked and unmarked) cannot be distinguished in compounds with only one internal boundary (cf. Basbøll 1978).
  7. *Handelshøjskolen* can be used both as a proper noun and a common noun, with the same prosody. *Landbohøjskolen*, on the other hand, is to-day only a proper noun, in good agreement with its prosody.
  8. *Stød* is a syllabic prosody, historically related to one of the 'word tones' of Swedish and Norwegian. Phonetically, *stød* is a kind of creaky voice occurring in the second half of a long vowel, or in a sonorant immediately following a tautosyllabic short vowel. There are a fair number of minimal pairs distinguished by *stød*. (See Fischer-Jørgensen, 1987, for the phonetics of *stød*, and Basbøll 1985, 1988 and 1998 for its phonology and morpho(n)ology.)
  9. It is controversial to what extent the middle part of the following examples have secondary stress (cf. Fischer-Jørgensen 1997); hence the parentheses in the notation.
  10. The same iconic principle is in accordance with the following observation: In pretonal position in phrases, *stød* is normally lost (to an even higher degree than does phonological vowel length): e.g. *spis fisk, hent 'penge* 'eat fish!', 'get money!' as compared to the stressed verb forms *'spis?, 'hent?*. Still, the heavier the pretonal word, the stronger the tendency to keep the *stød*; compare the following forms: *af(,)hen(?)t 'penge!, dekla,rer? 'penge* 'get money!, declare money!'.  
 11. Vowel shortening is sometimes accompanied by a change in vowel quality (in particular, a lowering, see below on *'stål, tråd?*). E.g., if *stød* is lost in first parts ending in a stressed vowel, the result is a short vowel with the normal short-vowel quality, cf. *'træ?, 'træ,kasse; 'på?, 'på,smø?re* 'wood, wooden box; on, smear on', where the vowel lowering in the shortened vowels is striking.
  12. As far as adjectives are concerned, the main principle is that just like (complex and simple) verbs, morphologically complex adjectives acquire *stød* in their second parts.
  13. The example *hun elsker slik, hun spiser slik* may occur with equal strong stress on the two verbs, viz. as an utterance with contrastive emphasis.
  14. What I have described as a prosodic type in terms of stress could also be described as a particular intonation type; however, nothing in the argument hinges on this difference.

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