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Basbøll, Hans

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Hans Basbøll

STØD, DIACHRONY AND THE NON-STØD MODEL

Jørgen Rischel (1934-2007) in memoriam

1. Introduction: what is Stød?

Stød is, according to the brilliant 18th century scholar Jens P. Høysgaard (see section 2), *et meget lidet hik*, i.e. 'a very little hiccup'. [note 1] The absence or presence of this "little hiccup" can be the only difference distinguishing words having otherwise identical pronunciations, e.g. (I use the symbol 'ʔ' for Stød although it is only exceptionally a glottal stop): *ven, vend!* 'friend', 'turn!' ['vɛn, 'vɛnʔ]; *musen, musen* 'the muse', 'the mouse' ['mu:sən, 'mu:ʔsən]; *skærende, skærene* 'cutting', 'the undersea cliffs' ['sɕɛ:rənə, 'sɕɛ:ʔənə]; *vandet, vandet* 'watery', 'the water' ['vanəð, 'vanʔəð]; *aftale, aftale* 'decision', 'decide' ['ɑw,tsæ:lə, 'ɑw,tsæ:ʔlə] (distinct pronunciation). As suggested by the examples, both lexical and morphological relations play a role for the distribution (see further section 4).

Stød is not limited to the native vocabulary, however. The following list contains some of my favorite composers (of German or Austrian origin, except Sibelius):

Händel, Mozart, Beethoven, Schubert ['hɛnʔdl, 'mo:ɹsɑ:ʔd, 'bɛ:ɹtso:ʔwən, 'ʃu:ʔbɛd]

Schumann, Brahms, Wagner, Sibelius ['ʃu(:)manʔ, 'bɛɑ:ʔms, 'vɑwʔnɛ, si'bɛ:ʔliʊs].

That Stød is not just part of the lexical storage of words, but (also) available as a productive mechanism, and that it involves fully productive morphological alternations, can be illustrated by the following example: *There is just one Émile Zola* (Danish: [so'la]), *but modern literature would benefit from having more Zola'er* (Danish: [so'læ:ʔɐ]). In this ad hoc plural form, the stressed vowel has been lengthened and raised, in addition to the Stød change (when compared to the singular form), cf. section 4.2. Such plural forms can be freely created, and obviously they have not been learnt as lexical forms.

Stød can fulfil three different language functions: (i) Stød can distinguish words: *mand* ‘man’, *man* ‘one (indef. pronoun)’ [‘manʔ, ‘man]; (ii) Stød is a potentially important signal for word structure and morphology as shown e.g. by [‘tsals, ‘halʔs] ‘number (poss.)’, ‘neck’/‘hall (poss.)’: *tals* without Stød shows that *s* must be clitic (cf. *hals*), see further sections 4.3 and 4.4; (iii) Stød can be used as an important identity marker, i.e. one which is salient to native speakers. That Stød fulfils these functions may be a reason why Stød is not disappearing (cf. section 7.4), even though Stød might seem an unnecessary complication of the language, also judged by the fact that many Danes in the southern part of the country do not have Stød in their language (nor word tones).

Eli Fischer-Jørgensen stated in the summary of her large instrumental investigation of Stød (1987):

'In accordance with Svend Smith (1944) a distinction was made between the first phase, i.e. approximately the first half of a long vowel or a short vowel before a sonorant consonant, and the second phase, the phase of the stød proper, comprising approximately the latter half of a long vowel or a sonorant consonant with stød after a short vowel, but there may, of course, be a gliding transition between the two parts, although particularly the pitch-drop may be rather abrupt. The first phase is characterized by a relatively high expenditure of energy: Compared to corresponding words without stød the pitch is always higher, the intensity of the vowel is often higher, and there may be somewhat more energy in higher formants. The second phase, the stød proper, is characterized by a strong fall in intensity' (SIDETAL 129?)

This agrees very well with a mora analysis, where a long vowel consists of two morae of which the second one can bear the Stød, just like the postvocalic sonorant after a short vowel in a Stød syllable bears the Stød (cf. section 4.1). However, this picture was not confirmed in later investigations by Grønnum & Basbøll who state (2007: SIDETAL):

'The laryngeal activity is a ballistic gesture which - minimally - makes for a slightly compressed voice quality, at one end of a continuum, and - maximally - creates a distinctly creaky voice at the other. Under emphasis it may become a complete glottal closure.

- It is a property of the syllable rhyme as a whole.
- It is aligned with the onset of the rhyme.
- It is variable with respect to strength and to temporal extension.'

We have not found any experimental evidence for a two-phase split up cognitively in Stød-syllables (the issue of the potential relevance of levels of formality in this respect has not been addressed).

I shall therefore consider the mora analysis to be phonological, relevant at a more abstract level than the phonetic one, and not least with great importance for the understanding of certain language changes, cf. Rischel (2001, this volume).

2. The pioneer of *Stød* analysis: Jens P. Høysgaard

The greatest Danish linguist before Rasmus Rask was Jens P. Høysgaard (1698-1773) who was born in Aarhus and worked as a technical assistant at the University (in Copenhagen) 1737-59. Hereafter he was a sexton at the University Church (Trinitatis) until his death. In 1752 he published an original and insightful 500 page work *Methodisk Forsøg til en dansk Syntax* ('Methodical Attempt to [make] a Danish syntax', including semantic analyses). His most influential work was his analysis of the Danish system of 'tones' (or syllabic prosodies); he briefly presented some main ideas in this domain in 1743, and in 1747 he published one of the most important works on the Danish language ever, viz. *Accentuered og Raisonnered Grammatica, Som viser Det Danske Sprog i sin naturlige Skikkelse, saa velsom dets Rime-konst og Vers-regler* ('Accentuated and Reasoned Grammar, which shows the Danish language in its natural shape, as well as its art of rhyming and rules of verse'). This book has an elaborate system, also used in the running text, for indicating prosodies (their domain, viz. word and/or syllable, will be taken up in the following sections).

According to modern terminology, his system of 'Aandelav' or 'Tone-hold' -- corresponding to modern (stressed) syllable types -- can be summarized as follows (with modern IPA-transcription):

	Stød	No Stød
Long V	V:ʔ <i>pæn</i> 'p ^h ɛ:ʔn	V: <i>pæn(e)</i> 'p ^h ɛ:nə
Short V	VCʔ <i>pen</i> 'p ^h ɛnʔ	VC <i>ven (penn(e))</i> 'vɛn 'p ^h ɛnə

Høysgaard's analyses have been of the uttermost importance for later studies of the Danish language in general, and by no means limited to questions of *Stød*, e.g. it is strongly manifested in the particular structuralist tradition founded and shaped by Poul Andersen, and with Louis Hjelmslev as an important source of inspiration (see Hjelmslev 1951, Andersen 1977, cf. Basbøll 2005:17-18 and 20-21).

3. Danish lack of beauty and a possible early literary piece of evidence for the Stød

A recent large-scale study of Inter-Scandinavian Language Understanding (Delsing & Åkesson 2005, <http://www.norden.org/pub/kultur/kultur/sk/TN2005573.pdf>) among other things considered attitudes towards language in the dimension 'fine vs. foul' (or 'nice/pretty' vs. 'ugly'). The test persons were approximately 1300 high school students (including 25% immigrants), aged 15-25, from different regional areas, and approximately 170 of the parents to the students. Danish occupies a singular place of little glamour and prestige: attitudes of informants in Sweden and Norway give scores corresponding to a 'fine vs. foul'-index (where 100 is maximally fine and 0 maximally foul or ugly) for Danish of 28 and 29, respectively, but 53 and 67 for the other mainland Scandinavian language (numbers from table 5:11, Delsing & Åkesson 2005:109).

It is not a new postulate that Danish is far from being particularly beautiful, or even an 'ugly language'. Consider the following quotation from a Swedish text more than four centuries old:

*'Der till medh: så wærdas de [: the Danes] icke heller att talla som annat folck, utan **tryckia ordhen fram lika som the willia hosta, och synas endeles medh flitt forwendhe ordhen i strupan, for æn de komma fram**, sammaledes wanskapa the munnen, då the talla, wridhan och wrengan, så att the draga then offwra leppen till then wenstra sidon och den nedra till then högra sidon, menandes dett wara sig en besynnerlighe prydnig och wellståndh.'* [boldfacing and italics mine, Söderberg 1908:SIDETAL!].

The speech is characterized as 'vehemens oratio contra Danos' [a vehement speech against the Danes] in the Latin original printed in 1554, viz. Johannes Magnus' *Historia de omnibus Gothorum Sueonumque regibus* [History of all Gothic and Swedish Kings], published by his nephew Olaus Magnus 1554 (ten years after Johannes Magnus' death (1544) in Rome where he had lived since 1526). The anti-Danish speech is attributed to bishop elect Hemming Gadh at 1510 where the tension between Sweden and Denmark was incredibly high.

This text can be translated as follows:

‘Also this: nor do they [: the Danes] stoop (‘worthy themselves’) to speak like other people, but **press the words forward as if they will cough, and appear partly to deliberately turn the words around in the throat, before they come forward** (i.e. out of the mouth), partly *they misshape the mouth when they speak, twist it and sneer it, so that they pull the upper lip to the left side and the lower to the right side, thinking this to be a particular ornament and well-standing.*’ [My translation, boldfacing and italics mine]

The **text part in boldface** (given in the Latin original just below) is probably the first literary **evidence on Stød** (which is realized by laryngealization, cf. section 1), with its dramatic comparison with deliberate coughing where the words are turned around in the throat. The *italicized part* is strongly emotional -- pejorative -- of the Danes’ way of speaking, *projecting ridicular attitudes* into Danish speech, and would certainly correspond to a very low score on a scale of beauty. I do not agree with Johs. Brøndum-Nielsen (1928 NB sidetal!!!) that the very fact that the passage is so strongly pejorative should lead us to discard it altogether as evidence of the Stød, but of course, it says nothing at all of linguistic relevance, in stark contrast to Høysgaard (section 2).

The Swedish text is a translation of the following Latin text:

‘Nec ut cæteri homines loqui dignantur, immò **more tussientium, aut verba in medio gutture formantium**, ita *de indust<r>ia proloquuntur, ut superius labium in sinistrum, inferiusque in dextrum latus distorquentes, ex singulari oris deformitate, singularem gloriam sese assequi posse existiment.*’ [boldfacing and italics mine]. Magnus (1554/1617:875).

This quotation emphasizes that spoken Danish sounds strikingly aberrant in Swedish ears, and that the Danish way of speaking is also notified by Swedish eyes. The passage makes implicit reference to the Stød, but one cannot, obviously, from this quotation deduce that Stød is particularly important for the evaluation found to-day of Danish as being ugly. I would be surprised, however, if Stød is considered a linguistic embellishment by persons not having it in their own speech.

4. *The Non-Stød Model on word structure interacting with syllabic and lexical structure*

In Basbøll (2003, 2005) I used the terminology 'Systematically Graded Productivity of Endings' (SGPE) for a model of word structure with morphological endings (suffixes) integrated at different levels (see section 4.3). In this paper I call the total model encompassing word structure and the relevant parts of syllabic and lexical structure for the *Non-Stød Model* for reasons that will become

clear just below. The model should be phonetically and psychologically interpretable (see Basbøll 2005: 22-25). I try to follow the principle of Occam's razor, e.g. so that a lexeme ('word') that does not exhibit morphological alternations, has a phonological representation that equals its phonetic surface form, apart from phonetic details. The basic steps of my analysis of Stød in Modern Danish are as follows:

- (1) Stød is a realisation of syllables that are *heavy* in a specific sense (see section 4.1), in my terminology *bimoraic*.
- (2) Therefore, we shall account for *Non-Stød*, i.e.: *which heavy syllables* (section 4.1) *have Non-Stød* (sections 4.2-4)?
- (3) Non-Stød can be lexically specified, either according to parts of the vocabulary or tied to individual lexical items. This is *Lexical Non-Stød* (section 4.2).
- (4) Non-Stød can also be morphologically specified, depending on word structure having different positions according to 'Systematically Graded Productivity of Endings' (section 4.3). This is *Morphological Non-Stød* (section 4.4).

4.1. Stød and syllabic structure: the mora as a weight unit

In order to have Stød, a syllable must fulfil certain *phonological conditions*. The most important one is that it should have a *long-sonority rhyme* which can be defined as follows: *the peak of the syllable if it is a full V, plus the following segment if it is a tautosyllabic sonorant*, i.e. the sonority in the rhyme stretches above the length of a short vowel, the length marker ':' being considered a segment for this purpose (this is pure terminology). Monosyllables like *pæn* 'nice', *spleen*, *pen* 'pen' and *ven* 'friend' [p^hɛ:ʔn, 'sɸli:n, 'p^hɛnʔ, 'vɛn] all have a long-sonority rhyme in this sense.

Whereas the condition on long-sonority rhyme belongs to the realm of segmental phonology (including the specification of full vs. neutral V), there is a further condition concerning prosody (suprasegmental phonology), viz. that a syllable in order to have Stød must bear *primary or secondary stress*, i.e. unstressed syllables cannot have Stød. A corollary of this condition is that pretonal syllables, i.e. syllables before the primary stress, are Stød-less, e.g. the first syllable of *tage hjem* 'go home' [tsa 'jɛmʔ] (stressed ['tsæ:ʔ]).

The term 'Stød-basis' is sometimes used referring to both of these two conditions (segmental and suprasegmental) above, sometimes just to the former of these (what I termed the criterion of 'long-sonority rhyme' just above). I shall use the term '*Stød-basis*' (only) for *syllables that*

fulfil both the criterion of long-sonority rhyme and of (primary or secondary) stress. To be fully explicit about Stød-basis, the following questions will give the answer:

- (1) Is the V long? If Yes: Stød-basis; if No: proceed to (2)
- (2) Is the syllabic peak a full (i.e. non-neutral) V? If Yes: proceed to (3); if No: Not Stød-basis
- (3) Is the V followed by a sonorant C? If Yes: proceed to (4); If No: Not Stød-basis
- (4) Has the syllable primary or secondary stress? If Yes: Stød-basis; If No: Not Stød-basis

The question now is: *when do syllables with Stød-basis have Stød and when do they not?* Stød-basis, in the sense of the 'phonetic' (Hansen 1943:6) basis for Stød, has proved a useful concept throughout Aage Hansen's classic study on Stød in (Modern) Danish (1943). But Stød-basis is a phonological concept (as defined just above) rather than a phonetic one. Stød-basis is an ad hoc term for Danish, and we ought to connect it to concepts from general linguistics. Trubetzkoy (1935:28, cf. 1939: 174, 194) classified Danish as a mora counting language with a 'Stimmbruchgegensatz' (lit. voice break opposition), and also Martinet (1937: SIDETAL) applies the term *mora* to Danish in a phonological sense (cf. Liberman 1982, and in general Vennemann 1988). I consider morae to represent a *phonologization of syllable weight* (phonologization being one kind of grammaticalization): whereas syllable weight is, phonetically, a gradual notion (which could, after operationalisation, be measured and investigated by different types of experiments), morae are discrete: syllables can be (as far as I am aware) monomoraic, bimoraic or trimoraic, that's it. This makes mora analyses a well suited tool in cross-linguistic comparisons, cf. section 7.1.

I propose the particular way to count morae in Danish (cf. Rischel 2001, this volume) to be as follows:

- (1) The maximum number of morae in a syllable is two: Danish has monomoraic and bimoraic syllables, but no trimoraic ones (Danish is like the other Modern Scandinavian languages in this respect, but opposed to Old Norse, for example, which (like other Old Germanic languages, and Latin and Finnish by the way) had trimoraic as well as monomoraic and bimoraic syllables, see section 7.1).
- (2) Unstressed syllables are monomoraic (like in the other Modern Scandinavian languages, see table 10.1 in Basbøll 2005:292).
- (3) Only sonorants can be moraic in Danish (this is in contradistinction to all other Scandinavian languages).

In the (monosyllabic) examples just below I indicate the moraic segments (including the length marker ':' which in Danish -- where there is no tense-lax distinction coupled to the vowel length

distinction (contra Herslund 2002:4-8, see Basbøll 2006) -- has the same characteristics as the vowel it lengthens, except syllabicity) by underlining (the segments are here represented between phoneme slashes by their phonetic symbols without diacritics, which is a deliberate simplification; Stød is not represented by any segment):

pæn 'nice', *pen* 'pen', *hus* 'house', *bus* 'bus', *nu* 'now'

[^hp^hɛ:ʔn, ^hp^hɛnʔ, 'hu:ʔs, 'bʊs, 'nu] /pɛ:n, pɛn, hu:s, bʊs, nu/.

The syllables with Stød-basis are bimoraic and have Stød when occurring as monosyllabic words, whereas the monosyllables *bus* and *nu* are monomoraic and have no Stød (but cf. the end of section 4.2 on a possible analysis in terms of extra-prosodic vowel length in *nu*). The hypothesis I shall depart from is: *Bimoraic syllables have Stød*, or, more precisely: *Stød signals the second mora of a syllable*. The latter formulation (but not the former) implies that monomoraic syllables do not have Stød. We must then account for the cases where bimoraic syllables do not have Stød, or, as I prefer to say, have *Non-Stød*.

The formulation *Stød signals the second mora of a syllable* seems from a phonetic point of view to agree very well with the results of Eli Fischer-Jørgensen (1987, 1989) -- as well as with Riber Petersen (1973) -- partly because Fischer-Jørgensen found that Stød is two-phased in a number of phonetic respects (see the quotation in section 1), partly because consonants with Stød were found by Riber Petersen and Fischer-Jørgensen (1987:129) to be significantly longer than similar consonants (also with respect to position) without Stød. However, these results were not confirmed in a number of studies by Grønnum & Basbøll (e.g. 2001, 2007), cf. on consonant length with respect to the Non-Stød Model Basbøll 2005:305-310. Concerning the issue of Stød phases and timing, Grønnum & Basbøll found a large variability, some cases of Stød being realized as should be expected according to Fischer-Jørgensen, others not at all (see Grønnum & Basbøll 2007). Therefore, I shall not in my argumentation here presuppose any particular timing or phases when I talk about Stød being a signal of the second mora: my basic claim is that Stød is a signal that the syllable has a second mora, i.e. is bimoraic or heavy in a specific phonological sense.

Two of the examples of the present section now demand an explanation: *ven* 'friend', *spleen* [^hvɛn, 'sblɪ:n] . The latter of these examples evidently is bimoraic, as shown by the long vowel: /sblɪ:n/. It will come as no surprise that the Non-Stød is due to its history as an English loan. The example *ven*, though it also has Stød-basis, has a different explanation, but still one that deserves the etiquette Lexical Non-Stød, the title of the next section.

4.2. Lexical Non-Stød

The goal of this section is to account for all lexically specified cases of Non-Stød in such a way that if Lexical Non-Stød applies to a given lexical item, its behaviour with respect to Stød can be predicted. Thus a lexical item can be specified for Lexical Non-Stød (the marked case, see section 5), or not, *tertium non datur*. For Stød-behaviour in the latter case, which is the regular (unmarked) one for the native vocabulary, see sections 4.3 and 4.4.

How does Lexical Non-Stød function? Logically, two answers are possible within a mora account as the one presented here. First, a syllable which has Stød-basis according to the principles of section 4.1, can be monomoraic; this is my answer for the isolated pronunciation of the monosyllable *ven* 'friend' [ˈvɛn] /vɛn/. It is well known from metrical systems and from diachronic phonology that a final consonant can be disregarded when syllable weight is counted (cf. also section 8 and Rischel in this volume). I shall call this principle *Extra-Prosodicity* (in agreement with Kristoffersen 2000:118,147). Second, a syllable which is undoubtedly bimoraic, e.g. due to a long vowel phoneme, can be exceptional regarding Stød; this is the case for *spleen* [ˈsɕli:n] /sɕli:n/. I shall say that its second mora is specified [-stød].

Extra-Prosodicity (on a lexeme). To decide which segments in a string consisting of vowels, the vowel length marker '!', and consonants, are moraic and which are non-moraic, the principles of section 4.1, without regard to Extra-Prosodicity, will imply that any V is moraic, that a non-V segment in the first position after a short full V is either moraic (if it is '!' or a sonorant C) or non-moraic (if it is an obstruent, i.e. a non-sonorant C), and that consonants following the first non-V position after V are non-moraic (since trimoraic syllables are not allowed in Danish). Extra-Prosodicity means that the final consonant of the lexeme is disregarded when the moraic structure is being decided (on the build up of syllabic-moraic structure, see Basbøll 2005:283-291 and 388-395). If the final consonant is an obstruent, or if it follows another consonant, it will be non-moraic anyhow according to the principles of section 4.1. I shall therefore limit myself, for expository reasons, to indicating *extra-prosodicity* by *angled brackets* as follows: if a lexeme is specified for Lexical Non-Stød, the consonant in the first non-V position after a short full V in the final syllable of the lexeme will be indicated as extra-prosodic, and surrounded by '<>', if it is a sonorant and is lexeme-final. This may sound complicated, but it follows from the logic of Extra-Prosodicity: if a

lexeme is specified for Lexical Non-Stød, the lexeme-final consonant is extra-prosodic, but this can only make a difference for a sonorant C immediately following a short full V, and only in this case extra-prosodicity will be indicated in the notation. Thus Extra-Prosodicity is relevant in cases like *ven* 'friend', *hul* 'hole', *mad* 'food' [*'vɛn*, *'hɔl*, *'mað*] /*vɛ<n>*, *hɔ<l>*, *ma<ð>*/ (cf. cases like *pen* 'pen', *hal* 'hall' [*'pʰɛnʔ*, *'halʔ*] /*pɛn*, *hal*/); after having introduced the concept of Extra-Prosodicity, I shall use the term *Non-Stød* in the sense *lack of Stød in a syllable with Stød-basis*. On the other hand, the final consonant in *hals* 'neck', *pæn* 'nice' [*'halʔs*, *'pʰɛ:n*] will be extra-prosodic and thus non-moraic anyhow, therefore no indication is called for: /*hals*, *pɛ:n*/. When Extra-Prosodicity is indicated as done here, the total moraic structure follows.

Lexical specification [-stød]. There are cases of exceptional Non-Stød in lexemes which cannot be accounted for by Extra-Prosodicity since the syllables in question are unambiguously bimoraic, e.g. the earlier mentioned example *spleen* [*'sɸli:n*] /*sɸli:n*/. Since Stød, according to the Non-Stød Model, signals the second mora of its syllable, I propose to indicate the exceptional behaviour of such lexemes by the lexical feature [-stød] which will be tied to the second mora (the locus for Stød, phonologically speaking). According to my general framework on lexical specifications, it follows that lexemes such specified will not participate in (non-suppletive) morphological Stød-alternations (as opposed to the lexemes discussed in section 4.4), except as a consequence of stress reduction (when bimoraic syllables are reduced to monomoraic when unstressed). *spleen* is not an isolated example of lexical specification [-stød]: not fully integrated loans from English and French, and many loans and names from other foreign languages (except German and the classical languages Latin and Greek), are so specified. In other words, such a lexical specification [-stød] will take effect through a (lexical redundancy) rule systematically covering large parts of the vocabulary (English loans, etc., as mentioned).

Lexical specification [-stød] (ending up on the second mora) is not limited to such 'foreign words and names'. Native words like *tørst* 'thirst', *torsk* 'cod' and *barsk* 'harsh' [*'tsɛpsɸ*, *'tsɔ:sɸ*, *'bɑ:sɸ*] are also unambiguously bimoraic but lack Stød, due to their evolution from short vowels followed by a voiceless and thus obstruent /r/ (in the 19th century, see section 7.2), i.e. they have only become eligible for Stød -- bimoraic -- quite recently (from a historical perspective). The lexemes in this group can thus be defined historically. That they are here given a lexical specification [-stød] agrees with their behaviour, in my view, in the sense that the

development of increasing Stød occurrences would correspond to a lexical specification (exceptional, or at least highly marked) being lost in an increasing number of lexemes.

Extra-Prosodicity takes priority over Lexical specification [-stød]. According to the previous subsections, most foreign words and names (such as *spleen*) as well as some native lexemes (such as *ven*, *torsk*, for example) are specified as Lexical Non-Stød (what I shall in the following indicate by suffixing a small cross (to their underlying forms, loosely speaking), e.g. |spli:n^{*}|, |vɛn^{*}|, |tɔrsk^{*}|. It must then be decided how Extra-Prosodicity and Lexical specification [-stød] take effect.

According to the logic of the system, there is no choice: *Extra-Prosodicity must take priority over Lexical specification [-stød]* since Extra-Prosodicity is a precondition for constructing the moraic structure, whereas Lexical specification [-stød] presupposes exactly the moraic structure (since it affects the second mora). Thus, for lexemes specified for Lexical Non-Stød: *if Extra-Prosodicity (symbolized by '< >') applies, i.e. if the lexeme-final consonant is a sonorant immediately following a short full V, Lexical specification [-stød] does not apply to this syllable, otherwise the latter applies all over* (see the last paragraphs of this section for examples). I find it satisfying from a methodological point of view that the model forces a priority, rather than leaves the possibility open for an (in principle) arbitrary decision. But furthermore, the priority inherent in the system is in accord with general linguistic arguments, since Extra-Prosodicity is a well-known phenomenon of wide applicability (for the use, diachronically, in Danish according to the Non-Stød Model, see Basbøll 2005:388-395 and sections 7.2 and 8 here), whereas Lexical specification [-stød] is a straightforward treatment of exceptions (still making predictions according to my framework, however, viz. the non-participation in morphological Stød-alternations of the lexemes involved, apart from effects of stress reduction).

How Extra-Prosodicity and Lexical specification [-stød] work together in the Lexicon. I shall just give a few examples illustrating how Lexical Non-Stød works. Notice that this part of the Non-Stød Model is highly restricted in that it does only make a bipartite distinction in the vocabulary concerning Stød, and that it makes very specific hypotheses on the distribution of Stød and of possible Stød-alternations in the 'non-native vocabulary'.

spleen ['sɸli:n] |spli:n^{*}|: the lexeme-final C is a sonorant but it does not immediately follow a short full V, it is thus not extra-prosodic in the relevant sense (indicated by '< >'); this

gives a bimoraic syllable with Lexical specification [-stød]: /sbl̥iː̯ n/. Thus it has no Stød neither when it occurs as a monosyllable, nor in any other context, e.g. *spleenen* (def. form) [ˈsbl̥iːnən] (schwa-assimilation is not indicated in this paper). A French name like *de Gaulle* [døˈgøːl] |døɡɔːɾ| would also, in all contexts, be without Stød. The same would apply to native lexemes like *torsk*, *tørst*: they do not participate in morphological Stød-alternations, but are Stød-less all over.

ven 'friend' [ˈvɛn] |vɛ̃ː|: the lexeme-final C is a sonorant immediately following a short full V, it is thus extra-prosodic in the relevant sense: /vɛ<n>/; this gives a monomoraic syllable: /vɛ̃n/. Thus it has no Stød when it occurs as a monosyllable: [ˈvɛn]; but it can participate in Stød-alternations, e.g. *vennen* [ˈvɛnʔən], since the lexeme-final C is not final in this word form and therefore not extra-prosodic (cf. section 4.4). *Clinton* [ˈkɫɛntsʌn] |kɫɛntɔ̃ː| in the same way has an extra-prosodic final /n/ (/kɫɛntɔ̃<n>/), but in a (constructed) plural form (for Hillary & Bill) it would be pronounced [ˈkɫɛnʔsʌnʔə], with Stød. Also a French common noun like *balkon* 'balcony' [bəlˈkʰʌŋ] |balkɔ̃ː| would be pronounced without Stød due to the extra-prosodic final sonorant C (/balkɔ̃<ŋ>/); in inflected forms the lexeme-final C will no longer be extra-prosodic (since it is no longer final), hence there is Stød in e.g. plural *balkoner* [bəlˈkʰʌŋʔə].

Extra-prosodic vowel length /<:̃>/. Without introducing any additional machinery except for the principle that *the length marker 'ː' is not manifested if it occurs as extra-prosodic*, Extra-Prosodicity can account for a number of vowel length alternations in examples of the type *pate* (French *pâté*) [pʰaˈtse] |pateː̃| which will lead to Extra-Prosodicity /pate<:̃>/; its def. sg. form will be *pateen* [pʰaˈtseːʔən] where vowel length will be manifested since it is no longer final and therefore not extra-prosodic either. By a similar approach aberrant monosyllables with final short vowel phonetically can be accounted for, e.g. *nu* 'now', [nu] |nuː̃| which will lead to extra-prosodic vowel length /nu<:̃>/, a length that will be manifested e.g. in *nuet* 'the present moment' [ˈnuːʔəð]. Before pause, words with extra-prosodic vowel length are often pronounced with strong aspiration (e.g. *nu* [ˈnuh], just like *ven* [ˈvɛnh]), what Jørgen Rischel sees as 'demorification' (Basbøll 2005:391, note 10). The analysis of extra-prosodic vowel length allows the (also from a diachronic point of view) tempting generalisation that *a vowel in a final open syllable is long*, which according to the Non-Stød Model makes the strong prediction that *no words will end in a long stød-less vowel*: there is

only one theoretically possible way a long vowel (which is by necessity bimoraic) could end up without Stød in this position (where Morphological Non-Stød cannot apply, see section 4.4), viz. by Lexical Non-Stød. But neither Extra-Prosodicity nor Lexical specification [-stød], the (only) two mechanisms of Lexical Non-Stød, can provide a long Stød-less final vowel: Extra-Prosodicity is relevant (cf. *nu* just above), thus Lexical specification [-stød] is not allowed to apply, but Extra-Prosodicity will give a short vowel (the case of *nu*). This prediction is interesting since the banning of long stød-less final vowels is a robust observation but has not been accounted for in any principled way, to my knowledge (it is different from cases like *spleen*). The whole approach of Extra-Prosodicity does not depend on its being accepted also regarding vowel length, but I find it a very promising analysis, and I shall follow it throughout this paper (in disagreement with Basbøll 2005:391, cf. Liberman 2007:105-107).

4.3. Word structure and the integration of lexicalised suffixes

According to the Non-Stød Model of Basbøll (2003, 2005), there are three levels of integration of morphological endings (whether inflectional or derivational, but only the former will be considered here) in Danish words. These depart from five steps cross-linguistically (Basbøll 2005:354-357) -- which are grammaticalised in Danish in three steps (Basbøll 2005:357-363) -- abbreviated FPE (Fully Productive Endings), SPE (Semi-Productive Endings) and UPE (UnProductive Endings). The general (cross-language) definitions of the five steps make no reference whatsoever to different classes of speech, neither directly nor indirectly, hence the grammaticalization of this (cross-linguistically relevant) five step scale into three steps for Danish is also in theory independent of word classes, i.e. nothing on word classes has been built into the definitions. [note 2] It is then an interesting empirical claim that the resulting classes in Danish turn out to be relevant for the separation of word classes, see fig. 15.1 from Basbøll 2005:428 ('complex words' are not specified in this figure, cf. Basbøll 2005:464-513).

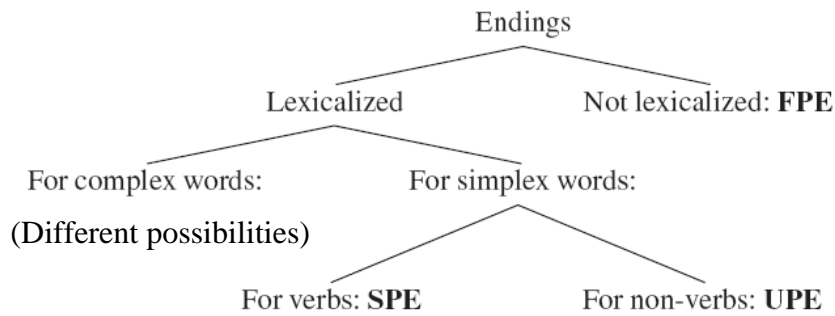


FIGURE 15.1. Classification of (inflectional) endings of simplex words according to degree of productivity.

The resulting word structure can be symbolized as follows:

{ [(lexeme UPE) SPE] FPE }

(...) =min-word

[...] =basic word

{...}=max-word

Clitics are outside the max-word, cf. *damen jeg mødte foran kirken's mand er forresten ansat i kommunen* 'the-lady I met before the-church's husband is by-the-way employed in the municipality', i.e. the husband to the lady I met before the church is by the way employed in the municipality'. This is relevant for Stød, cf. clitic genitive /s/ in *tals* 'number (gen.)' ['tsals]. This syllable has a phonological structure which would have obligatory Stød if it were a monosyllabic native word occurring in isolation (cf. *hals* 'neck, hall (gen.)' ['halʔs]). The lack of Stød on *tals* is due to the fact that /s/ is clitic, i.e. does not belong to the max-word, and it is therefore irrelevant for Stød (cf. section 4.4). The clitic cannot be lexicalised (as an ending).

As indicated in figure 15.1, the most important criterion dividing the inflectional endings in this system is whether they are *lexicalised*, i.e. UPE and SPE, or *not lexicalised*, i.e. FPE. In other words, the inflectional endings within the basic word are the lexicalised ones UPE and SPE, whereas the non-lexicalised endings, in my terminology FPE, are outside the basic word. Thus the distinction between the endings UPE, SPE and FPE regard *positions in the word structure*, these positions expressing different degrees of integration between the endings and their stem: UPE is most integrated and FPE least integrated, with SPE occupying an intermediate position between the two. Also shown on figure 15.1 is the principle that *the position of lexicalised inflectional endings in simplex words is predicted by word class (part of speech): for nouns and adjectives (i.e. non-*

verbs) it is *UPE* and for verbs *SPE*. This generalisation accords with the more complicated nature of verbs (compared to nouns and adjectives) as far as inflection is concerned.

Thus the Non-Stød Model operates with three positions for Danish inflectional suffixes, viz. (in my terminology) last in the min-word (*UPE*), last in the basic word (*SPE*), and outside the basic word (*FPE*). When we (in this paper, cf. Basbøll 2005:464-513) consider only simplex words, thus excluding derivations and compounds (and mixtures thereof), the relation between position (here termed '*UPE*-position', '*SPE*-position' and '*FPE*-position'), and the form of the inflectional endings filling the positions, is the following:

(1) Certain inflectional endings always fill the *UPE*-position or *SPE*-position, viz. for non-verbs and verbs, respectively; they are thus always lexicalised (cf. figure 15.1 above) and can simply be termed *UPE* or *SPE*, respectively (for nouns/adjectives vs. verbs). All endings which are formally (phonologically) different from the *FPE*-endings in the grammatical category concerned, are *UPE/SPE*. E.g. in the pl. of nouns, the *FPE* ending is /ər/, phonetically [ɐ]; therefore, the pl. ending schwa in e.g. *huse* 'houses' ['hu:sə] must be an *UPE* (*hus* being a noun) and fill the *UPE*-position. And in the past tense of verbs, the *FPE*-ending is /əðə/, and therefore, the past ending /tə/ in e.g. *spiste* 'ate' ['sɔi:sðə] must be an *SPE* (*spise* being a verb) and fill the *SPE*-position.

(2) Certain inflectional endings always fill the *FPE*-position, i.e. these endings cannot be lexicalised. This is true for the grammatical categories *definite* (in nouns), and *comparative and superlative* (in adjectives). These can simply be termed *FPE* (in the sense 'non-lexicalisable *FPE*') in agreement with their (fixed) position. There are no grammatical categories in the verb which always occur in the *FPE*-position, i.e. which cannot be lexicalised. That the comparative and superlative endings cannot be lexicalised is due to an analytical principle: there is a thematic schwa vowel in fully productive comparatives and superlatives, and it can be lexicalised. Concerning the non-lexicalisability of definite endings in nouns, it is not hard to think of semantic/pragmatic reasons for this.

(3) The third class of inflectional endings is less straightforward in their correspondence between form and position. They could be called 'lexicalisable *FPE*-endings' (endings indicated by an asterisk in Grønnum's (2007:76) table 7.2). Their form is thus what we find for endings in the relevant grammatical categories which do occur in the *FPE*-position, i.e. outside the basic word: for nouns the plural ending /ər/, for adjectives the neuter (indef. sg. pos.) ending /t/ and the

plural/definite/grade ending /ə/, and for verbs the present (active) ending /r/, the past ending /əððə/, the participle endings /ənə/ (pres.) and /əð/ (past), and the gerund ending /ən/. All these endings occur (in the fully productive pattern) in the FPE-position, and in some cases (for some lexemes), they occur, as lexicalised endings, in the UPE-position (for non-verbs) or SPE-position (for verbs).

The lexical information concerning form and position of the inflectional endings can be given as follows, in all word classes disregarding cases of suppletion: for nouns, the only inflectional information on lexemes concerns the plural: if the ending has another form than that of the FPE (/ər/), the ending must be indicated, if it has the FPE-form but occurs in the UPE-position, this must be indicated as well (e.g. by '=', following the use in Basbøll 2005), the unmarked case which needs no indication is just FPE (i.e. /ər/ occurring in the FPE-position). For adjectives, the choice is either '=' (meaning that the adjective ending /ə/ is lexicalised and thus occurs in the UPE-position, but /t/ not) or 'T' (both relevant adjective endings /ə/ and /t/ are lexicalised and thus occur in the UPE-position), or nothing (both endings /ə/ and /t/ occur in the FPE-position). For verbs, the situation is a little more complicated concerning actual endings of a different form than those which occur in the FPE-position (see Basbøll 2005:373-376); but it can still be analysed according to exactly the same methodology, relevant lexical markings including '=' (meaning that the past ending /əððə/ occurs in the SPE-position whereas the other endings are not lexicalised), 'T' (meaning that the endings have the form of the FPE-endings but occur in the SPE-position, i.e. are lexicalised), and nothing (meaning that the endings both with respect to form and position are FPE).

This system may appear complicated, but it constitutes a genuine simplification of the description of inflectional morphology due to some very general hypotheses: (1) there is one grammatical category for each word class which is always lexicalised if lexicalisation with respect to inflectional endings occurs at all for a given lexeme (what I call the 'privileged inflectional category', viz. for nouns the plural, for adjectives the plural/definite/grade, and for verbs the past tense); (2) either lexicalisation occurs in the category under (1) alone, or it occurs in all lexicalisable categories (in agreement with the significance of the notion 'inflectional paradigm'); (3) lexicalisation can occur with respect to position without consequences for the form. This point even represents a very general phenomenon in the evolution of languages: it is natural that an ending becomes more integrated with the stem as time goes by, i.e. that an FPE changes its position to the relevant slot closer to the stem while still maintaining its form. Thus it is not, in my view, a methodological

weakness that a grammatical ending with a particular phonological form for some lexemes is lexicalised and for others not (i.e. occur in different positions thus exhibiting different degrees of integration with the stem), it is a natural consequence of the way languages develop.

4.4. Morphological Non-Stød

According to the Non-Stød Model, there are no Stød-rules, Stød just being a signal for the second mora of a syllable (unless it has Lexical Non-Stød, cf. section 4.2). But which principle accounts for the morphological Stød-alternations that can be observed throughout the native vocabulary, i.e. what lies behind the cases of Non-Stød found in the noun *huse* 'houses' ['hu:sə] when compared to the sg. form *hus* ['hu:ʔs], or in the verb form *spiste* 'ate' ['sɸi:sɸə] when compared to the imperative *spis!* ['sɸi:ʔs], or the noun *udtale* 'pronunciation' ['uð₁tsæ:lə] when compared to the verb *udtale* 'pronounce' ['uð₁tsæ:ʔlə] (to pick three examples almost at random)? According to the Non-Stød Model, the answer must lie and does lie in *Morphological Non-Stød* (which applies within the basic word, i.e. endings occurring in the FPE-position, as well as clitics, are irrelevant for Non-Stød). Morphological Non-Stød has two subcases:

- (1) *A penultimate syllable in '(...)' (the 'min-word', including UPE) has Non-Stød; and*
- (2) *a monosyllabic '(...)' has Non-Stød before a syllable (domain: basic word).*

The Non-Stød Model exemplifies an interaction between syllables (where the difference between bimoraic and monomoraic syllables is decisive for Stød, cf. section 4.1) and morphemes (position of suffixes in the word structure as well as the category of monomorphemic monosyllables determining the operation of Morphological Non-Stød).

Common to its two subcases is that Morphological Non-Stød affects a (bimoraic, obviously) syllable before a syllable belonging to the same basic word; thus lack of Stød on a bimoraic syllable indicates that the following syllable is morphologically closely connected to what precedes, i.e. to the stem in the case of Morphological Non-Stød. Subcase (1) assures that also monomorphemic words belonging to the native(-like) vocabulary (for this purpose including German, Greek and Latin loans, see section 4.2) obey the generalisation that Non-Stød indicates that the following syllable belongs together with the Non-Stød syllable, i.e. in native words there can be no strong

morphological boundary following a Non-Stød syllable (restricting this term to bimoraic syllables). This is potentially important for the addressee (for examples, see Basbøll 2005: 461-463).

The three examples mentioned in the beginning of this subsection (4.4) are accounted for as follows through the application of Morphological Non-Stød:

(a) The noun *huse* 'houses' ['hu:sə], compared to the sg. form *hus* ['hu:ʔs]: the plural ending schwa has a different form than the FPE ending in plural (which is /ər/), therefore it is an UPE (occurring in the UPE-position since it is a lexicalised inflectional ending for non-verbs); the bimoraic stem /hu:s/ is thus followed by schwa (/ə/) and thereby penultimate within the min-word; hence Morphological Non-Stød.

(b) The verb form *spiste* 'ate' ['sɸi:sɸə], compared to the imperative *spis!* ['sɸi:ʔs]: the past tense ending has a different form than the FPE ending for past tense (which is /əðə/), therefore it is an SPE (occurring in the SPE-position since it is a lexicalised inflectional ending for verbs); the bimoraic stem /sɸi:s/ is thus followed by a schwa-syllable (/tə/) and thereby penultimate within the min-word; hence Morphological Non-Stød.

(c) The noun *udtale* 'pronunciation' ['uð,tsæ:lə], compared to the verb *udtale* 'pronounce' ['uð,tsæ:ʔlə]: the noun is composed from the stem *ud* and the stem *tale*; the monosyllable *ud* (with Stød in isolation: ['u:ʔð] or (much more frequent) ['uðʔ]) occurs before a syllable in the basic word, hence Non-Stød; the stem *tale* has a bimoraic penultimate syllable, hence Non-Stød also here. The verb *udtale* 'pronounce' ['uð,tsæ:ʔlə], on the other hand, is an infinitive form with the ending schwa (cf. the imperative and the past participle *udtal!*, *udtalt* ['uð,tsæ:ʔl, 'uð,tsæ:ʔlɔ]); the stem of the verb *udtale* is thus not monosyllabic, but bisyllabic, and is therefore not within the realm of Morphological Non-Stød; hence no Non-Stød, i.e. Stød (the Non-Stød of *ud* has the same explanation as for the noun). Examples like the noun and verb *udtale* have been standard in arguing that Stød-rules for such words must be formulated in terms of word classes, but notice that I have not referred to word classes (classes of speech) in the formulation of Non-Stød.

I shall finally in this section add an example from another word class, viz. numerals (it is controversial whether the morphological endings for ordinal numbers are inflectional or derivative, but I shall not base any part of the argumentation on this distinction). There are two morphological

endings in Danish (suppletion set aside, as always): *-ende* (e.g. in *tyvende* 'twentieth' [ˈtʰsy:wənə] from *tyve* 'twenty' [ˈtʰsy:wə]) and *-te* (e.g. in *tolvte* 'twelfth' [ˈtʰsɔldə] from *tolv* 'twelve' [ˈtʰsɔl]). The first question is: which of these two morphological endings for the ordinal forms of numerals is FPE? The answer is, unambiguously, *-ende* since this form is used in default cases; this can be shown e.g. by the recent form *firsende* [ˈfɪʁsənə] from *firs* 'eighty' [ˈfɪʁs] (which is in the process of replacing the older form *firsindstyvende* 'eighty' [ˈfɪʁsɪns, tʰsy:wənə], even though conservative speakers still do not accept it); on the other hand, *-te* cannot be used in such novel cases. Thus *-te* will always, according to the Non-Stød Model, be lexicalised, whereas *-ende* can occur in the FPE-position. The prediction follows that *-te* leads to Non-Stød of preceding monosyllabic stems (cf. *femte* 'fifth', *fem* 'five' [ˈfɛmðə, ˈfɛm]), whereas *-ende* will not influence on the Stød-conditions of its stem. Both these predictions are fulfilled.

5. *Markedness and Stød: implications of the Non-Stød Model*

Markedness can be taken in different senses:

- (i) Markedness phonetically ('something extra');
- (ii) Markedness as lack of contrast (neutralization) in certain contexts (here: according to prosodic types), viz. phonologically;
- (iii) Unmarkedness as 'elsewhere' (default);
- (iv) Markedness in terms of frequency (this aspect will be disregarded here).

Markedness with respect to Stød or lack thereof is a very different issue depending on which components of language are considered: phonetics, phonology, lexicon or morphology. We depart from the Non-Stød Model.

Markedness phonetically: There is no doubt that Stød is phonetically 'something extra' (a kind of creaky voice, i.e. laryngealization), cf. section 1 and Smith 1944, Riber Petersen 1973, Fischer-Jørgensen 1987, Grønnum & Basbøll 2007. The phonetic realisation of Stød can be highly variable phonetically, and the difference between Stød and no Stød also sometimes extremely slight acoustically, as emphasized by Grønnum & Basbøll; but no serious scholar would dream of defending the opposite position (that syllables without Stød should be phonetically more marked), i.e. *Stød is marked phonetically*.

Markedness phonologically: According to section 4.1, syllables with Stød must have a long-sonority rhyme and have either primary or secondary stress; following the Non-Stød Model, a syllable with Stød is bimoraic, Stød being a signal of the second mora. There are no phonological restrictions for syllables without Stød, i.e. all types of syllables, with or without long-sonority rhyme, with or without stress, with or without full vowel peak, etc., can occur without Stød. Thus Stød is phonologically marked in the sense that there are (heavy) phonological conditions on which syllables can have Stød, but none on which kind of syllables can occur without Stød, i.e. *Stød is marked phonologically.*

Markedness lexically: According to the Non-Stød Model, Lexical Non-Stød is a mechanism (encompassing Extra-Prosodicity as well as Lexical specification [-stød], see section 4.2) of wide applicability through the language, in particular in the non-native vocabulary (e.g. English and French loans), but also for a range of native lexemes. A lexical specification [stød] is not excluded within the framework of the Non-Stød Model, since a certain phonetic or phonological trait, if it occurs in all forms of a given lexeme, will be part of the lexical make-up of that lexeme, phonetic details left aside. This is, in my view, the psycholinguistically most plausible assumption (cf. Basbøll 2005:385-387). But it follows from the Non-Stød Model that the only function of such a lexical specification [stød] can be to block Morphological Non-Stød from having any effect (cf. section 4.4), and that it is void of any function in the phonology proper. It can thus have at most a marginal function in Modern Danish. There is therefore no doubt that, according to the Non-Stød Model, Non-Stød (i.e. lack of Stød in syllables with Stød-basis) is lexically marked, i.e. *Stød is lexically unmarked.*

Markedness morphologically: According to the Non-Stød Model, the distribution of Stød in morphology (morphological Stød-alternations) is due to the principle of Morphological Non-Stød (sections 4.3 and 4.4). Thus Non-Stød is very much restricted morphologically, whereas the default case is Stød (in bimoraic syllables), i.e. *Stød is morphologically unmarked.* Just as for markedness lexically, this conclusion, naturally, presupposes that syllables without Stød-basis do not count in this respect (since the contrast between Stød and lack thereof in such syllables is neutralized, to speak in Praguean terms which seem to me appropriate for considerations of markedness).

6. Markedness, Scandinavian word accents ('word tones'), and Stød

The Swedish, and Norwegian, linguistic parallel to the distinction between Stød and Non-Stød is the opposition between the word accents 1 and 2, which is tonal. The basic general and historical principle is: *Stød corresponds to Accent 1 and no Stød to Accent 2*. The distinction between these two tonal word prosodies in Swedish and Norwegian was and is *phonetically* very unlike anything found in (Standard) Danish. For *Swedish and Norwegian* word accents, clearly *Accent 2 is the marked term phonetically* since it exhibits 'something extra' compared to Accent 1 (cf. section 5), viz. a deviation from the (sentence) intonation contour (for Central Swedish, see Engstrand 1995).

But there are other systematic differences related to syllable structure and word structure between these prosodies in Danish and Swedish/Norwegian which complicate the general and historical principle: *Stød corresponds to Accent 1 and no Stød to Accent 2*. In Basbøll 1972:7-8 (and Basbøll 1985:3-4, Basbøll 2005:86), I summarized the systematic *phonological* differences (disregarding lexical and morphological differences) in four points as follows:

(1) Danish: the Stød characterizes a stressed syllable (thus each part of a compound may have Stød or Non-Stød, cf. *landmand*, *landsmand*, *mandstøj*, *kvindetøj* 'farmer', 'compatriote', 'male dress', 'female dress' [¹lan₁man[?], ¹lan[?]s₁man[?], ¹man[?]s₁ts₁Δj, ¹kven₁ts₁Δj]);

Swedish/Norwegian: the word accent (word tone) characterizes a (stressed) word: thus a compound as a whole has either Accent 1 or Accent 2 (East Norwegian *kongevogn*, *panservogn* 'king's chariot', 'tank' with Accent 2 and 1, respectively, the corresponding (Stockholm) Swedish words *kungavagn*, *pansarvagn* both with Accent 2, see Riad 1998:85).

(2) Danish: monosyllables may have Stød (*mand* 'man' [¹man[?]]) or not have Stød (*ven* 'friend', *kat* 'cat' [¹vən, ¹k^had]);

Swedish/Norwegian: monosyllables always have Accent 1 (*man* 'man', *vän* 'friend', *katt* 'cat' [¹man:, ¹vən:, ¹k^hat:]).

(3) Danish: Stød never occurs in syllables with a short vowel followed by zero or an unvoiced consonant, i.e. syllables without Stød-basis (cf. *kat* 'cat', *nu* 'now' ['kʰɑd̥, 'nu]);

Norwegian/Swedish: no such restrictions (with respect to segmental phonology) exist (cf. *kat* 'cat', *nu* 'now' ['kʰɑt̪, 'nu++:] (very rough transcription)).

(4) Danish: it follows from (3) just above that Stød is the marked term;

Norwegian/Swedish: it follows from (2) just above that Accent 2 is the marked term.

It is thus clear from the four points above that for *Swedish and Norwegian* word accents (in addition to Accent 2 being the marked term phonetically), *Accent 2 is also marked phonologically*: Only Accent 1 occurs in monosyllables, this is thus a position of neutralization, and Accent 1 is therefore the phonologically unmarked term. As shown in section 5, on the other hand, Stød is the marked term in Danish both phonetically and phonologically. *Phonetically and phonologically the markedness relations thus go counter the general equation 'Accent 1 corresponds to Stød and Accent 2 to no Stød'*. One manifestation of this difference in markedness can be heard from the treatment of foreign (non-German, non-Classical) names (cf. section 4.2): they have in Danish Lexical Non-Stød, in Swedish and Norwegian Accent 1 (e.g. the opera diva *Callas* ['kalas, 'kɑl:ɑs]).

Concerning *marking* lexically and morphologically, we saw in section 5 that in Danish, according to the Non-Stød Model, Non-Stød (i.e. lack of Stød in syllables with Stød-basis) is the marked term since it occurs only under certain specifiable conditions (section 4). Lexically and morphologically, there are great similarities between Danish Non-Stød and Swedish/Norwegian Accent 2, also with respect to markedness. Thus in summary: (1) phonetically and phonologically, Danish and Swedish/Norwegian are very different, also with respect to markedness; (2) morphologically and lexically, Danish and Swedish/Norwegian are much more similar, also with respect to markedness, and the principle of correspondence is: *Non-Stød corresponds to Accent 2*.

7. Some diachronic implications of the Non-Stød Model

7.1. Morae, typology and diachrony: Rischel and the Non-Stød Model

The following table gives the central information on the moraic typology relevant for this paper (but only in so far as Scandinavian languages are concerned) which is contained in table 10.1 from Basbøll (2005:292), based upon the final table of Basbøll 1989 (' μ ' and ' σ ' symbolise 'mora' and 'syllable', respectively).

	Old Norse	(Modern) Icelandic/Swedish/Norw.	(Modern) Danish
μ in stressed (primary or secondary) σ	1 or 2 or 3	2	1 or 2
μ in unstressed σ	1 or 2 or 3	1	1
which types of C can be moraic?	all	all	only sonorants
word-final moraic C?	yes	yes	only in Stød-syllables
length of word-final V under stress?	only /V:/	only /V:/	mostly /V:/ (in some "small words" /V<:>/, cf. section 4.2)

The reader is referred to the whole moraic framework developed by Rischel as part of a unified theory of Nordic i-Umlaut, syncope and Stød-genesis (this volume). In the following, I shall just give a few short quotations from his small informal paper (2001, in Danish), cf. section 8. To account for the historical relation between the Danish Stød and the Scandinavian word tones, Rischel advances (2001:22, my translation): [note 3]

'the hypothesis that both stød in Danish and the tonal accents in Norwegian and Swedish more or less indirectly reflect that a word contour high-low was realised differently depending on the mono- or polysyllabicity of the word form, and in monosyllabic word forms also on syllable weight (light vs. heavy).'

The latter part of the quotation, which concerns weight of monosyllables, is what directly presupposes the mora analysis. Using his typological knowledge, Rischel evokes the following background for the mechanism of Stød-genesis (2001:19, my translation): [note 4]

'There is a widespread tendency that a steeply falling tone on a syllable is accompanied by final laryngealisation, that is of something stød-like or a creak (supposedly) as a response to an impulse earlier in the syllable; this is known e.g. from some East Asian tone languages.'

This idea is highly suggestive (also) from a modern phonetic point of view, cf. the quotation from Grønnum & Basbøll 2007 in section 1. (NINA: er du enig??). A further interesting observation by Rischel also alludes to his knowledge of tone languages: He identifies a 'drift' (2001:19, my translation) in Nordic language history with the consequence [note 5]

'that the inventory of word contours within each system is limited to maximally two types, so that we do not have both tonal accents and stød together, (...) nor three or more distinctive tones (the limitation to a binary opposition is a strong typological difference to many tone languages).'

This is a basic premise for the diachronic analysis of the relation between the prosodic systems found in Scandinavia.

7.2. The Non-Stød Model and sound changes in the 19th and 20th century: r-vocalization, Extra-Prosodicity and developments of length

As said in section 4.2, native words like *tørst* 'thirst', *torsk* 'cod' and *barsk* 'harsh' [ʰtʰɛɾs̥t̪, ʰtʰɔːs̥t̪, ʰb̥ɑːs̥t̪] are unambiguously bimoraic but lack Stød, due to their evolution from short vowels followed by a voiceless and thus obstruent /r/ (in the 19th century). They have only become eligible for Stød -- bimoraic -- when the postvocalic /r/ vocalized to become a glide, i.e. the second component of a diphthong (in *tørst*), or fused with the vowel completely (in *torsk*, *barsk*). Stød is gradually spreading in such forms, with imperatives (like *spark!* 'kick' [ʰs̥pɑːɾ̥t̪]) and certain derivatives (like *tyrkisk* 'Turkish', *færdsel* 'traffic' [ʰts̥yɛɾ̥t̪is̥t̪, ʰfæɾ̥t̪s̥t̪]) in the lead, with a tendency to now generalizing such forms with Stød: earlier in the twentieth century they were pronounced [ʰs̥pɑːt̪, ʰts̥yɛɾ̥t̪is̥t̪, ʰfæɾ̥t̪s̥t̪], and before that something like [ʰs̥pɑ̯k̥ʰ, ʰt̪h̥ɔ̯k̥ʰisk̥ʰ, ʰfɛɾ̥t̪s̥t̪] (cf. Brink & Lund 1975:261-284). The lexemes in this group can thus be defined historically, as those departing from the sequence short vowel plus /r/ plus a further voiceless consonant that devoices the preceding /r/. The decisive point in the evolution, seen from the perspective of the Non-Stød Model, comes when the post-V /r/ becomes a sonorant and thereby qualifies for moricity (this point

has come with its vocalization ending up with a glide or 'r'). That they are, in my model, provided with a Lexical specification [-stød], makes the prediction that their [-stød] can be lost (whereby they get Stød), and will be expected to disappear over time, by being lost (since such a lexical marking is exceptional, or at least highly marked) in an increasing number of lexemes, perhaps organized in lexical subgroups.

/r/-vocalization has also hit monosyllables with a short vowel and a word-final /r/, such as *bær*, *smør* 'berry', 'butter', to-day pronounced [ˈbæɹ̥, ˈsmœɹ̥] with a final glide. The writer Karen Blixen (Isak Dinesen) (1885-1962), to take a famous example, who had a very conservative language for her age, pronounced this word-final /r/ after a short stressed vowel before pause as a strongly aspirated fricative, just as /ð/ could be pronounced as an aspirated or even affricated fricative, e.g. (approximately) in examples like *tør*, *gud* 'dare(s)', 'god' [ˈtʰœɹ̥h, ˈɡuθh]. Jørgen Rischel has mentioned this aspiration as a signal of 'demorification' (Basbøll 2005:391, note 10) in examples like *nu*, *ven* 'now', 'friend' pronounced [ˈnuh, ˈvɛnh], see section 4.2. From the point of view of the Non-Stød Model, the important change comes, as mentioned above, when these word-final obstruents occurring after short stressed vowels become sonorants and thereby qualify for moricity. This is a precondition for Stød, but Stød will not occur unless or until they have been lifted from the ban of Non-Stød, so to speak.

The crucial question within my framework is the status of Extra-Prosodicity. As far as the glides are concerned (and the approximant /ð/ belongs in this group too, in my view, but cf. note 8) the most simple chronology is that Extra-Prosodicity was the general principle (the default case, this also seems to be Rischel's position for Danish more generally, see section 8) in a long period. This period ends when an ongoing vowel shortening before glides and approximants has been carried through, which is happening now (see Basbøll 2005:392-395): *ud*, *bog*, *bag*, *bord* are no longer pronounced [ˈu:ʔð, ˈbɔ:ʔw, ˈbæ:ʔj, ˈbɔ:ʔɹ̥] but [ˈuðʔ, ˈbɔwʔ, ˈbæjʔ/ˈbæ:ʔ, ˈbɔœʔ]. We thereby go from general to lexically specified Extra-Prosodicity, e.g. *vid* 'wit' [ˈvið], which before this change would be covered by general Extra-Prosodicity, will after this change be lexically specified for Extra-Prosodicity, since the vowel of the type *hvid* 'white' is no longer a phonologically long vowel: old [ˈvi:ʔð] new [ˈviðʔ]. When this vowel shortening is becoming lexicalised, the Stød system is restructured with far ranging consequences. This restructuring also involves the sonorant

consonants, i.e. nasals and /l/ (Rischel's sonority type VS, cf. section 8) which are going from lexical specification of moricity to unspecified (see Basbøll 2005:392-395). The change of words like *syd*, *spyd*, *stød* from [ˈsy:ʔð, ˈsɔ̃y:ʔð, ˈsɔ̃ðø:ʔð] (19th century) to [ˈsyð, ˈsɔ̃yð, ˈsɔ̃ðøð] is, primarily, a case of *mora-drop*, and only secondarily drop of Stød, just like drop of Stød in pretonal position which is mora-drop with the automatic consequence, according to the Non-Stød Model, that Stød is lost (e.g. *gå!*, *gå hjem!* 'go!', 'go home!' [ˈɡɔ:ʔ, ɡɔ:jɛmʔ]).

Eli Fischer-Jørgensen states in the summary of her large scale instrumental study of the Stød (1987:129) that "long vowels with stød were found to be significantly shorter than long vowels without stød (but only in distinct speech), whereas sonorant consonants with stød were significantly longer than sonorant consonants without stød". That long vowels with Stød are shorter than long vowels without Stød in natural nondistinct speech, but not in distinct speech, agrees very well with the phonetic proposal by Grønnum & Basbøll quoted in section 1 involving a ballistic gesture: this would make us predict that both vowels and consonants with Stød could not be prolonged in positions or situations (be they stylistic or dependent on position) where similar segments without Stød could well be prolonged. This might account for the length patterns one finds at high levels of formality, in utterance final position, or in Child Directed Speech: segments without Stød are expected, according to this proposal, to be prolongable more or less freely, as opposed to segments with Stød.

The situation of *utterance medial sonorant consonants* with or without Stød is quite a different matter. Grønnum & Basbøll (2001) found that consonants with Stød are not generally longer acoustically than consonants without stød across all positions (cf. Grønnum & Basbøll 2007:SIDETAL). For my original proposal on moraic consonants (1988, 1998), where I had built, regarding phonetic matters, on Fischer-Jørgensen (1987, in agreement, as far as consonant length is concerned, with Riber Petersen 1973 and Brink et al. 1991:88), the decisive type of phonetic counterevidence was examples like *vinder*, *vinder* 'win(s)', 'winner' [ˈvɛnʔv, ˈvɛnɐ] with no significant difference in length (as against Fischer-Jørgensen's and others' statements). But this was an early version of my model, without the now crucial concept of Extra-Prosodicity. I will here present the strongest possible claims, for reasons of methodology, of the Non-Stød Model as presented in this paper. The predictions of length of sonorant consonants with or without stød are:

(i) *moraic consonants are longer than similar (also with respect to position) non-moraic*

consonants, or in other words: *mora is a unit of quantity also for consonants* (this is a stronger, and a more general, position than the one presented in Basbøll 2005:305: *mora is a unit of quantity*, like segment and syllable); (ii) it follows that *word medial sonorant consonants* (after a short vowel) *with and without Stød are not expected to differ (significantly) in length* (Extra-Prosodicity is excluded in this position, thus all the consonants involved are moraic); (iii) it also follows that (utterance medial) *word final sonorant consonants* (after a short vowel) *with and without Stød are expected to differ (significantly) in length* (Extra-Prosodicity will make a difference here, the consonant without Stød being extra-prosodic and thus non-moraic, the consonant with Stød being moraic, see section 4.2). There is still an exciting story to be told, in my view, concerning the relations between moricity, length and stød of sonorant consonants, diachronically and geographically.

7.3. The Non-Stød Model and Stød changes in morphology: present tense forms

According to the Non-Stød Model, we should expect that some FPE-endings during the language evolution become lexicalized (cf. section 4.3); in the case of syllabic suffixes, this will increase the application of Morphological Non-Stød. But this is not the only evolution involving Stød that can be observed. Verbs is the word class where most morphological changes with respect to Stød seem to have occurred, in particular in the present tense forms. The large majority of verbs belong to the open (fully productive) class with the past ending /ǝðǝ/, and these do not have Stød in any forms except the imperative (cf. section 8), quite regularly according to the Non-Stød Model. But then, how come that there not only is no general pressure towards Non-Stød in present tense forms that have had it, historically, but even a tendency to increase the occurrence of Stød in a number of other present tense forms (see Brink & Lund 484-489)? In this paper, I can just sketch an answer from the perspective of the Non-Stød Model (cf. Basbøll 2005:447-460).

The large weak class can be illustrated by *elske* 'love' ['ɛlsǵǝ] whose present and past tense forms are *elsker*, *elskede* ['ɛlsǵǝ, 'ɛlsǵǝðǝ]; the word structure formula for these three forms are (where I just use orthography, for the ease of readability): [(elsk) e], [(elsk) e] r, [(elsk) e] ede. In all cases, Morphological Non-Stød applies (see section 4.4). The present ending is unambiguously non-syllabic r, and not syllabic er, as can be seen when comparing *gå*, *går* '(to) walk', 'walk(s)' ['ǵǝ:ʔ, 'ǵǝ:ʔ] with *å*, *åer* 'river', 'rivers' ['ʔ:ʔ, 'ʔ:ʔ] or *le*, *ler* '(to) laugh', 'laugh(s)' ['le:ʔ, 'leǵʔ /

'le:ʔɐ] with *le*, *ler* 'scythe, ' scythes' ['le:ʔ, 'le:ʔɐ]. Thus in the only context when there is a contrast, and not neutralization, between an /r/-phoneme, and the sequence schwa plus an /r/-phoneme (i.e. /ər/), the present tense form unambiguously has the non-syllabic ending, in contrast to the noun plural ending and the nomen agentis-ending; this pattern is general.

What are, then, the predictions of the Non-Stød Model with respect to present tense forms of verbs whose past tense is not the FPE /əðə/? The present ending (underlying non-syllabic) /r/ must be lexicalised, i.e. occur in the SPE-position (for verbs, see section 4.3), thus Morphological Non-Stød cannot apply, hence Stød in forms with Stød-basis: *synger*, *spiser*, *løber* 'sing(s)', 'eat(s)', 'run(s)' ['søŋʔɐ, 'sɔi:ʔsɐ, 'lø:ʔbɐ] (that the final segment ends up as [ɐ] is an automatic consequence of the principles for syllable structure, cf. Basbøll 2005:289-291). In verbs like *male* 'paint', which in the 19th century had the past ending *te*, but now is shifting to the ending *ede*, the prediction of the Non-Stød Model will be the following: There will be Stød in the present tense when the past tense is in *te* (as for *spiser* above); when the past tense changes into *ede*, the minimal change will be to have the other tense forms occur in their lexicalised form ('I' in my system, cf. section 4.3), i.e. the present tense would be expected still to have Stød. In my view, it is no accident that verbs with a long vowel are particularly prone to get stød (cf. Brink & Lund, loc. cit.): syllables with long vowel are those which more clearly than any other types of syllables disclose their bimorcity from the phonetic surface, and the basic principle is that bimoraic syllables have Stød.

7.4. The Non-Stød Model and the recent expansion of Stød

Grønnum & Basbøll (2007) give the following examples (with no indication of secondary stress), based upon Grønnum's observations (mainly) from Danish radio broadcasts through many years (cf. Grønnum 2007: 80-81, Grønnum 2005: (chapter 11, sidste sider) SIDETAL!):

'Simple nouns in the plural

['fɔ:mu:ʔɐ] *formuer* 'fortunes' but ['fɔ:mu:u] *formue* is always without stød in the singular;

['ʌmʁɔ:ʔðɐ] *områder* 'areas' but ['ʌmʁɔ:ðə] *område* is always without stød in the singular.

Compound nouns in the plural

['vi:nnawʔnə] *vinnavne* 'wine names' but ['nawnə] *navne* alone is always without stød;

['sy:yhu:ʔsə] *sygehuse* 'sickhouses (i.e. hospitals)' but ['hu:sə] *huse* alone is always without stød.'

Grønnum & Basbøll (2007) suggest that a generalization, along the following lines, of part (2) of the principle of Morphological Non-Stød (see section 4.4), is underway [only syllables with Stød-basis are considered in this and the following formulation about 'without stød/no stød' (= Non-Stød here), and first parts of compounds are not covered]:

'before any syllabic suffix only monosyllabic stems have no stød.'

We continue to give the following example:

'[ˈvi:nɔ̃mʔi] *vingummi* 'wine gum' but [ˈɔ̃mi] *gummi* alone is always without stød'

and suggest a further generalization of part (2) of Morphological Non-Stød to be in the state of progression:

'in any word which phonetically resembles a stem + a syllabic suffix, only monosyllabic stems have no stød.'

We do not know yet whether or to which degree the many examples (collected by Grønnum) of new cases of Stød in such environments represent a prevailing tendency that will end up changing the Stød-system substantially (but this needs to be investigated). Seen from the point of view of the Non-Stød Model, such a generalization would not affect the phonological part of the model (section 4.1): bimoraic syllables will still have Stød. Also the lexical part (section 4.2): Lexical Non-Stød, encompassing Extra-Prosodicity and Lexical specification [-stød], will still apply as before (but cf. section 7.2 on r-vocalization). Only Morphological Non-Stød (sections 4.3 and 4.4) will have to be modified more or less radically depending on which tendencies will become prevailing Stød-changes (cf. section 9).

8. Morae and sonority: Rischel's hypothesis on a dialect specific distribution of Stød in monosyllables

Jørgen Rischel in his small but important semi-published paper (in Danish) on the origin of Stød (2001) presents (in section 3) a specific hypothesis on how the interaction of the sonority hierarchy

(loosely speaking, see below) and a moraic analysis of Stød can account for some decisive differences in laryngealisation between different Danish dialects. In this section, I shall present his views (which at a general level I endorse), mainly by translating central passages, and discuss them in relation to my own model of word structure and Stød, viz. the Non-Stød Model, cf. section 4 above. Rischel (2001: 21-22) says [in my translation, all underscoring is in the original]: [note 6]

'One can operate with a sonority hierarchy where V = vowel is most sonorous, then comes G = glide (2d component of [falling] diphthongs), then S = postvocalic consonantal sonorant, and last, O = final obstruent ('+ENCL' is meant to symbolize enclitically added sonorous material):

I	II	III	IV
V:	VG	VS	V**
VSS	VSO		VO
VG/VS+ENCL*			

(* expansions of type II and type III)

** only 'small words' with vowel shortening and the type *vindu* 'window')

As examples, the following words can be mentioned:

I	II	III	IV
V: <i>bo, lås</i> 'live', 'lock'	VG <i>vej('), tov</i>	VS (<i>et</i>) <i>hul, skud</i>	V <i>vi</i> (pron.)
VSS <i>halm</i>	VSO <i>kalk</i>		VO <i>kat</i>
VG/VS+ENCL <i>vej'en,</i> <i>hul'let</i>			

Type I-II may be called 'sonority-heavy' [heavy with respect to sonority], type III-IV 'sonority-light'.

This categorization is very interesting, and from a general phonological point of view, I shall interpret these two tables as follows: Rischel uses, as he says, the sonority hierarchy to define the segments in the formula of the tables. The categories used (V, G, S, O) can be defined as syllabic vocoids, non-syllabic vocoids, sonorant non-vocoids, and non-sonorant segments (which are redundantly non-vocoid), respectively (cf. Basbøll 2005:173-187). [note 7] But the four types I-IV cannot be defined solely by reference to the sonority hierarchy which attributes inherent sonority to

individual segments. Even Rischel's main distinction between types I-II together (as 'sonority-heavy') versus III-IV together (as 'sonority-light') seems blurred, from a pure sonority hierarchy point of view, by the fact that VSS (as type I) and VS (as type III) have, strictly speaking, the same sequence of (inherent) sonority.

But this is only apparently a problem. In fact, Rischel's types are in my view adequate, insightful and well defined, but we need to invoke *sonority length of the rhyme* (pre-V consonants being irrelevant here, cf. section 4.1), and not just degree of sonority of the individual segments. It is obvious, first, that the rhyme has longer sonority in type I (which has longer sonority than there is in a short V followed by a single non-syllabic sonorant) than in both type II and type III, and in both type II and type III the sonority length of the rhyme is longer than in type IV (whose sonority is just in the short V). Concerning the distinction between type II and type III, G has higher inherent sonority than S (as a vocoid (sonorant) vs. a non-vocoid sonorant), so that difference can account for the distinction between VG and VS. But if we want to use only one single criterion it must be sonority length of the rhyme; the question then is: is a glide inherently longer than a sonorant consonant? (I do not know the answer NINA: har du synspunkter her??). Finally, concerning the subtype (of II) VSO, its rhyme length (not sonority rhyme length) distinguishes it from VS (III). [note 8] Extra-Prosodicity may be relevant here, and I shall return to this subtype at the end of section 8 (cf. also sections 4.2 and 7.2).

Rischel continues:

'Now, in the different regional variants [or dialects/HB] the threshold for laryngealisation applies to different steps of the sonority hierarchy (according to modern linguistic jargon, this is a question of 'parameter setting'):

Southern Danish (and Scandinavian more generally):	no laryngealisation
Northern West Danish:	laryngealisation in type I
Northern East Danish:	laryngealisation in type I and II, but variation in the type VG (<i>vej</i> , <i>tov</i> 'street', rope')

(...)

'In type II a plosive is assimilated to a sonorant: *land* > [*lan'*]; long obstruent > short (*takk* > *tak*); the difference long : short survives in sonorants as a difference in number of morae. The stød is now distinctive [contrastive] at the surface for indeclined nouns: *ven* ctr. *mæn'd*, (*det almene*) *vel* ctr. *væl'd*.

The normal case is that type III has not in itself got any *stød*, because an unchecked sonorant [i.e. a sonorant not followed by a tautosyllabic consonant/HB] did not count as a mora and thus did not have the word final falling tone. Nor did type IV get the *stød*. But *stød* as a rule occurred in three situations where the number of morae increased, viz. before enclisis (see type I) with the result (*et*) *tal*, but *tal'let*; in hiatus in the type *vindu'et*; and in imperative with the result *tæl'*!. Within the framework of my hypothesis, the most plausible explanation would be that, in exactly these three situations, the total word contour with a strongly falling tone has been concentrated in a syllable that would otherwise be too light [to receive the *Stød*/HB]; the function is as if the sonorant occurred in checked position finally in the syllable.'

Rischel's generalization in the table above shows an interesting regional distribution of 'laryngealisation' depending on sonority type of the syllables. The cases that demand a specific account, according to Rischel, are the syllables with the structure VS that do get *Stød*, and he lists three types of those. He takes lack of *Stød* to be the unmarked situation in this type (III) "because an unchecked sonorant did not count as a mora". This corresponds very well to Extra-Prosodicity in the Non-*Stød* Model (cf. section 7.2 on cases where Extra-Prosodicity is the unmarked situation in my model). The three situations to be accounted for specifically "where the number of morae increased" and where we get *Stød*, will here be analysed according to the Non-*Stød* Model (modern standard pronunciation):

- (i) enclisis, i.e. *Stød* in *tallet* 'the number' ['tsalʔəð], cf. sg. indef. *tal* 'number' without *Stød*; the final /l/ in *tal* is extra-prosodic (i.e. /<l>/), but when the def. ending (which is always FPE, cf. section 4.3) is added, /l/ is no longer extra-prosodic, the syllable is therefore bimoraic, hence *Stød*;
- (ii) hiatus, i.e. *Stød* in *vinduet* 'the window' ['ven̩ɖu:ʔəð], cf. sg. indef. *vindu* ['ven̩ɖu] without *Stød*; there is, as for all other word-final full vowels, a final vowel length marker /:/ in *vindu* which must in this case be extra-prosodic (i.e. /<:/>, see section 4.2), but when the def. ending (which is always FPE, cf. section 4.3) is added, /:/ can no longer be extra-prosodic, the syllable is therefore bimoraic, hence *Stød*;
- (iii) imperative, i.e. *Stød* in *tæl'* 'count!' ['tsɛlʔ], cf. infinitive *tælle* ['tsɛlɐ]; the verb is the only word class where the stem is not always a basic word (cf. an imperative like *hækl'* from *hækle* '(to) crochet' which deviates from principles for both word structure and syllable structure, see note 2), therefore the imperative cannot have an extra-prosodic last segment, hence an imperative cannot be a VS-syllable with no *Stød*. The imperatives *spil'*, *skod'* ['sʰɛlʔ, 'sʰɔðʔ], from infinitive *spille*,

skodde 'play', 'butt (a cigarette)' ['sʔelə, 'sǵʌðə], illustrate this when compared to the corresponding nouns *spil*, *skod* 'play', 'butt' ['sʔel, 'sǵʌð] which do not have Stød (in the Non-Stød Model due to Extra-Prosodicity).

Thus all three specific cases of stød in VS-monosyllables mentioned by Rischel have a unitary account according to the Non-Stød Model, viz. Extra-Prosodicity, in full agreement with Rischel's suggestions in the text.

'The stød in imperatives is one reason why there is in Danish distinctive [contrastive] stød also in monosyllabic word forms. There is a further, collateral, reason, also concerning types II/III, namely the set of sound changes which hit a part of the words of type II (the subcategory VSO), whereby, first, the combination sonorant + plosive was assimilated to sonorant, as in *land* > [*lan'*], and, second, the earlier difference in length between long and short consonant disappeared, so that we ended up by having total or partial segmental identity between the *ns* in *ven* and *vend*. Thereby stød has become distinctive [contrastive] at the surface also in indeclined nouns, even though this opposition can be interpreted, structurally, as a difference in number of morae.' [cf. the quotation above starting with 'In type II/HB]

The final problem to consider here is the evolution of the subtype VSO (belonging to type II), in the quotation above exemplified by *land* > [*lan'*]. From the point of view of the Non-Stød Model, it is not necessary to postulate any increase of length of the nasal as a result of the assimilation/drop of /d/: if Stød is determined at a stage where /d/ has not yet disappeared, the syllable will get it (since Extra-Prosodicity cannot apply in that situation). On the other hand, if the rule lengthening a sonorant C before a C would apply (cf. section 7.2), also this would lead to Stød (a long consonant in that position being moraic). The only situation where no Stød would result, would be if /d/ were dropped, without leaving any trace, before the advent of Stød; but as any other chronology also this one would need specific good arguments to be accepted.

9. Conclusion: Stød in the past and the future

The focus of the present paper has been more on the Non-Stød Model in general, the kind of predictions that can be derived from it, its application to Modern Danish and comparisons with other Modern Scandinavian languages, than on the origin of Stød. I hope, nevertheless, that I have shown the relevance of this model for diachrony, also for the remote past. There are conditions on Stød that seem to have had force for a very long time. Changes in the distribution of Stød and Non-

Stød have started as phonetically conditioned, have been phonologized, then morphologized and lexicalized, and restructurings of the system are still going on.

Rischel concludes his discussion as follows, with formulations I wholeheartedly endorse (2001:23-24, my translation, underscoring as in the original): [note 9]

'One can also change the point of departure for the description of Nordic accentuation and say -- perhaps more à la Basbøll -- that lack of stød, respectively accent 2, in polysyllables with heavy (in Danish: sonority-heavy) full syllables indicates that phonologically, the words concerned are prototypical, completely streamlined polysyllabic words which also morphologically-lexically are perceived as well integrated unified wholes. Then we just have to add a paragraph about why we lack stød in Danish also in monosyllables of the type *ven*.'

The last paragraph asked for by Rischel is easily formulated in terms of Extra-Prosodicity within my framework. This gives a coherent overall description, and even though there are many complexities in the Stød-system, and many dialect speakers do not have any systematic use of Stød in their language, there is no tendency at all towards general loss of Stød (cf. section 1 on the three functions of Stød). The language evolution seems to take quite another direction:

Stød is expanding rather than disappearing in younger speech as shown by Grønnum, see section 7.4. Seen from the perspective of the Non-Stød Model, one should rather say that Non-Stød is disappearing, or, more precisely, that the logical endpoint of the tendencies towards Stød in new contexts (like those exemplified in section 7.4) could be a simplification and restructuring of Morphological Non-Stød so that the distinction between three different structural positions of inflectional endings is given up, but the central mechanism of an ending-based parsing is kept: a mechanism scanning the string from the right in order to identify, phonologically, what could be a suffix. This story has not been told yet.

Institute of Language and Communication

University of Southern Denmark

Campusvej 55

DK-5230 Odense M

Notes

[Note 1]. This paper is a thoroughly reworked version of my talk on the Seminar on Early and Prehistoric Language Development in North-Western Europe, August 24th-25th, 2006, at the University of Southern Denmark (Odense), with the title 'Stød and its relation to syllabic and morphological structure reconsidered: diachronic aspects of a general model'. Some formulations from the introductory sections 1-3 are taken from Basbøll (2007, semipublished). I am indebted to Nina Grønnum for having read through the manuscript and letting me benefit from her remarks, both concerning content and style.

[Note 2] The five cross-language steps in productivity (or, but in the inverse order, in the integration with the stem) of suffixes: endings which are default in novel words and which are always suffixed to a normal word form; endings which are default in novel words but which are not always suffixed to a normal word form; endings which can be added to a subset of novel words; endings which are not added to novel words but where the suffixed word does not always obey the restrictions for monomorphemic words; endings which are not added to novel words and where the suffixed word always obeys the restrictions for monomorphemic words. In Danish, this cross-language five step system is grammaticalized in three steps: FPE corresponds to the first of the five cross-language steps, e.g. Danish past /əðə/; SPE corresponds to the three steps in the middle, e.g. Danish infinitive /ə/ and past /tə/ (the former can be preceded by an impossible word form, cf. infinitives like *hækl-e*; the latter can be preceded by a long V which shows that there must be a morpheme boundary before it, e.g. *mente* ['me:nðə] where the long vowel shows that the word form cannot be monomorphemic) (cf. section 4.3); UPE e.g. Danish noun plural /ə/.

[Note 3] Rischel's (2001:22) Danish text (cf. note 6): 'den hypotese at både stødet i dansk og de tonale akcenter i norsk og svensk mere eller mindre indirekte afspejler det at en ordkontur høj-lav blev realiseret forskelligt efter om ordformen var enstavet eller flerstavet, og i enstavede ordformer også efter om stavelsen var let eller tung.'

[Note 4] Rischel's (2001:19) Danish text (cf. note 6): 'Der er en udbredt tendens til at en stærkt faldende tone på en stavelse bliver ledsaget af final laryngalisering, altså af noget stødagtigt eller knirk (formodentlig) som respons på en impuls tidligere i stavelsen; det kender vi fx fra nogle østasiatiske tonesprog.'

[Note 5] Rischel's (2001:19) Danish text (cf. note 6): 'at inventaret af ordkonturer inden for det enkelte sprogsystem gennemgående begrænses til højst to typer, så vi for eksempel ikke har tonale akcenter og stød i samme sprogform, (...) og så man heller ikke har tre eller flere distinktive toner (begrænsningen til en binær modsætning er en markant typologisk forskel fra mange tonesprog).'

[Note 6] Rischel (2001) is based upon one of his two talks (the other being on Stød and morphology) at the Linguistic Circle of Copenhagen December 8, 1998, in a seminar on my new Stød theory. Rischel's original text in Danish (2001:21-22) is: 'Man kan operere med et klangstavelshierarki, hvor V = vokal er mest sonor, så kommer G = glide (2. diftongkomponent), så S = postvokalisk konsonantisk sonorant, og sidst O = final obstruent (" +ENKL" skal symbolisere enklitisk tilføjet sonort materiale):

(...) [the table/HB]

(* udvidelser af type II og type III) (** kun "småord" med vokalforkortelse og typen *vindu*)

Som eksempler kan nævnes: (...) [in the table I have corrected V to VO for *kat* and VV to VG for the type *vej(')*, *tov*, (also in the next table) in agreement with Rischel's first table/HB]

Type I-II kan man kalde "klangtunge", type III-IV kan man kalde "klanglette". Man kan nu sige at i de forskellige regionale varianter befinder tærskelværdien for laryngalisering sig forskellige steder i klangstavelshierarkiet (iflg. moderne lingvist-jargon er det et spørgsmål om forskellig "parameter setting"): (...) Type III har normalt ikke i sig selv fået stød, fordi en udækket sonorant ikke talte som mora og ikke fik den ordfinale faldende tone. Type IV fik heller ikke stød. Men stød indtraf regelmæssigt i tre stillinger, hvor moratallet blev øget, nemlig foran enklise (se type I), så man får (*et*) *tal*, men *tal'let*, ved hiat i typen *vindu'et* og i imperativ, så man får *tæl!*. Inden for rammerne af min hypotese ville den mest plausible forklaring være at man netop i de tre stillinger har fået den tonale ordkontur med stærkt faldende tone koncentreret på en stavelse der ellers er for let; det har altså her fungeret som om sonoranten stod i dækket stilling sidst i stavelsen. (...)

Imperativstødet er én grund til at vi i dansk har fået distinktivt stød også i enstavede ordformer. Der er en samvirkende grund, også vedrørende type II/III, nemlig det sæt lydudviklinger der ramte en del ord af type II (underkategorien VSO), hvorved for det første sonorant + klusil blev assimileret til sonorant, som i *land* > [*lan'*], og for det andet den tidligere længdeforskel mellem lang og kort konsonant svandt, så vi helt eller delvis fik segmental identitet mellem *n*'erne i *ven* og *vend*. Derved er stødet blevet overfladedistinktivt også i ubøjede substantiver, selv om modsætningen strukturelt kan tolkes som en forskel i moratal.

[Note 7] The distinction between vowels and glides is methodologically problematic from the point of view of the sonority hierarchy if the difference in the categories V and G is considered to be (only) one of syllabicity (as peak or non-peak), since in that case the sonority hierarchy cannot be independently defined as a hypothesis on syllable structure.

[Note 8] When Rischel classifies the final segment in *skud* as S (type III) (to-day [¹s̥ʊð]) it is probably either, phonetically, an intermediate stage, close to the ending, of the evolution from an original plosive (/t/ in Old Nordic, later /d/ in Danish) via a voiced fricative ending up with an approximant; or, phonologically, a more abstract classification.

[Note 9] Rischel's (2001:23-24) Danish text (cf. note 6): 'Man kan også skifte udgangspunkt for beskrivelsen af nordisk akcentuation og - måske mere Basbøllsk - sige at stødløshed, henholdsvis akcent 2, i flerstavellesord med tunge (i dansk: klangtunge) fuldstavelser markerer at der fonologisk er tale om prototypiske, helt strømlinjede flerstavellesord der samtidig morfologisk-leksikalsk opleves som velintegrerede helheder. Så skal der blot tilføjes en særlig paragraf om hvorfor stødløshed i dansk også findes i enstavelsesord af typen *ven*.' Shortly before the quotation Rischel described the occurrence of Stød (rather than Non-Stød, in my terminology) which needs a much longer and clumsier formulation.

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